Vol. 1009 Number 3

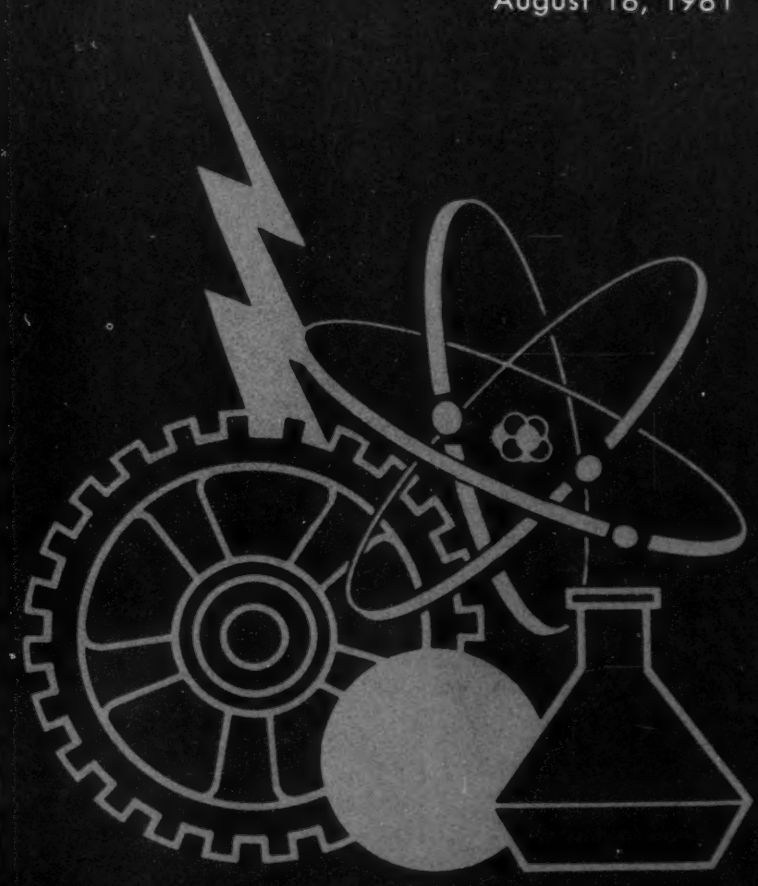
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 18, 1981



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

August 18, 1981 Volume 1009 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90-95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,065,410, Re. S.N. 257,434, Filed Apr. 24, 1981, Cl. 521/51, POLYURETHANE FOAMS HAVING AN INTEGRAL SKIN USING A MIXTURE OF POLYOLS AS THE CHAIN EXTENDER, Hermann Schafer, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Gene Harsh, et al., Ex. Gp.: 143

4,217,345, Re. S.N. 256,433, Filed Apr. 22, 1981, Cl. 424/180, 3-O-(BETA-D-GLUCURONOPYRANOSYL)-SOYASAPOGENOL B, Masanao Shinohara, et al., Owner of Record: *Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 125

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,160,264, Reexam. No. 90/000,028, Requested: July 16, 1981, Cl. 198/851, CONVEYOR CHAIN, Delmar H. Raybould, Owner of Record: *Inventor,* Attorney or Agent: Huebner & Worrel, Ex. Gp.: 313 Requester: Thiokol Corp., Newtown, Pa.

3,625,268, Reexam. No. 90/000,031, Requested: July 20, 1981, Cl. 144/34, FELLING HEAD RECIPROCATING BLADE TYPE, Carl Kempe, Owner of Record: *Logging Development Corp.,* Attorney or Agent: Craig & Antonelli, Ex. Gp.: 324, Requester: Morbark Industries, Inc., Winn, Mich.

3,654,090, Reexam. No. 90,000,015, Requested: July 2, 1981, Cl. 435/7, METHOD FOR THE DETERMINATION OF ANTIGENS AND ANTIBODIES, Antonius Hermanus Wilhelmus Maria Schuurs, Owner of Record: *Organon, Inc.,* Attorney or Agent: Robert H. Falk, Ex. Gp.: 170, Requester: Organon, Inc., West Orange, N.J.

4,032,816, Reexam. No. 90/000,029, Requested: July 16, 1981, Cl. 315/73, SAFETY SWITCH WHICH RENDERS HID LAMP INOPERATIVE ON ACCIDENTAL BREAKAGE OF OUTER ENVELOPE, Ferdinand Rokosz, Owner of Record: *Westinghouse Electric Corp.,* Attorney or Agent: W. D. Palmer, Ex. Gp.: 250, Requester: Westinghouse Electric Corp., Pittsburgh, Pa.

4,156,830, Reexam. No. 90/000,030, Requested: July 16, 1981, Cl. 315/73, HIGH INTENSITY DISCHARGE LAMP WITH INTEGRAL MEANS FOR ARC EXTINGUISHING, Herbert S. Strauss, et al., Owner of Record: *Duro-Test Corp.,* Attorney or Agent: Darby and Darby, Ex. Gp.: 256, Requester: Westinghouse Electric Corp., Pittsburgh, Pa.

Vacancy Announcement
Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of $50,113 per annum, which is the current statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

Qualifications: Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;

2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Crystal Plaza 2, Room 9C05
2011 Jefferson Davis Hwy.
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

MARGARET M. LAURENCE
July 27, 1981 *Assistant Commissioner for Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Aug. 18, 1981

PP. 4,684	4,242,233	4,260,490	4,266,384
Re. 30,613	4,243,109	4,260,631	4,266,515
3,829,903	4,243,905	4,260,702	4,266,658
3,860,008	4,244,492	4,260,876	4,266,660
3,954,835	4,244,519	4,260,986	4,266,761
3,964,548	4,244,787	4,260,990	4,266,802
3,997,566	4,245,851	4,261,222	4,266,991
4,053,485	4,247,089	4,261,227	4,267,017
4,082,702	4,247,107	4,261,312	4,267,038
4,088,610	4,247,604	4,261,367	4,267,045
4,104,474	4,247,863	4,261,581	4,267,118
4,118,484	4,248,237	4,262,074	4,267,151
4,138,573	4,248,338	4,262,118	4,267,224
4,162,115	4,248,524	4,262,463	4,267,387
4,179,518	4,249,398	4,262,481	4,267,495
4,180,188	4,249,411	4,262,651	4,267,800
4,180,657	4,249,946	4,262,736	4,267,806
4,182,254	4,250,856	4,262,829	4,267,862
4,194,472	4,251,125	4,263,350	4,267,893
4,197,230	4,251,287	4,263,355	4,267,935
4,198,234	4,251,464	4,263,550	4,268,018
4,198,707	4,251,743	4,263,689	4,268,049
4,201,096	4,251,875	4,263,944	4,268,162
4,211,398	4,251,956	4,263,958	4,268,189
4,211,731	4,252,112	4,264,054	4,268,603
4,212,780	4,252,228	4,264,061	4,268,637
4,218,364	4,252,913	4,264,106	4,268,675
4,220,183	4,253,481	4,264,107	4,268,869
4,220,925	4,254,262	4,264,274	4,269,022
4,221,735	4,254,517	4,264,297	4,269,076
4,222,893	4,255,367	4,264,478	4,269,151
4,223,146	4,255,805	4,264,522	4,269,237
4,223,479	4,255,910	4,264,617	4,269,321
4,224,324	4,256,381	4,264,705	4,269,385
4,225,528	4,256,565	4,264,874	4,269,412
4,226,781	4,256,760	4,264,952	4,269,564
4,226,820	4,257,068	4,265,127	4,269,659
4,229,023	4,258,133	4,265,133	4,269,881
4,231,459	4,258,227	4,265,153	4,269,884
4,232,369	4,258,324	4,265,206	4,269,921
4,233,163	4,258,518	4,265,277	4,269,997
4,233,199	4,258,796	4,265,278	4,270,123
4,233,244	4,258,838	4,265,299	4,270,130
4,234,541	4,258,980	4,265,483	4,270,132
4,234,892	4,259,220	4,265,761	4,270,203
4,235,250	4,259,406	4,265,773	4,270,263
4,235,950	4,259,639	4,265,863	4,270,363
4,236,076	4,259,903	4,265,867	4,270,426
4,236,514	4,260,107	4,265,927	4,271,050
4,237,265	4,260,311	4,265,953	4,272,019
4,239,004	4,260,335	4,266,088	
4,239,601	4,260,406	4,266,180	

Disclaimers

3,936,828.—*Allen R. Muesse;* Orange and *Jess C. Wright,* El Cajon, Calif. VLF NAVIGATION SYSTEM. Patent dated Feb. 3, 1976. Disclaimer filed June 18, 1981, by the assignee, *Rockwell International Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,045,176.—*Gary J. Proksch* and *Dean P. Bonderman,* Indianapolis, Ind. PREPARATION OF OPTICALLY CLEAR SERUM. Patent dated Aug. 30, 1977. Disclaimer filed May 12, 1981, by the inventors.

Hereby enters this disclaimer to claim 10 of said patent.

4,196,561.—*Gary L. Kruse,* Spring Lake, Mich. PACKAGING MACHINE WITH INTERCHANGEABLE CONTAINER SUPPORTS AND CAM-OPERATED CUTTER. Patent dated Apr. 8, 1980. Disclaimer filed Apr. 17, 1981, by the assignee, *Dake Corp., Division of JSJ Corp.*

Hereby enters this disclaimer to claims 22-24 and 28 of said patent.

4,207,616.—*Richard H. Heeren,* Palatine, Ill. LOGIC ARRAY HAVING IMPROVED SPEED CHARACTERISTICS. Patent dated June 10, 1980. Disclaimer filed May 15, 1981, by the assignee, *Teletype Corp.*

Hereby enters this disclaimer to claim 1 of said patent.

4,210,439.—*Frederic G. Bollinger;* Creve Coeur, and *John J. D'Amico,* Olivette, Mo. N-SUBSTITUTEDOXOBENZOTHIAZOLINES AND THEIR USE AS PLANT GROWTH REGULATORS. Patent dated July 1, 1980. Disclaimer filed June 23, 1981, by the assignee, *Monsanto Co.*

Hereby enters this disclaimer to claims 1 to 8 of said patent.

4,244,607.—*Thomas L. Blose,* Houston, Tex. CYLINDRICAL THREADED CONNECTION. Patent dated Jan. 13, 1981. Disclaimer filed May 28, 1981, by the assignee, *Hydril Co.*

Hereby enters this disclaimer to all claims of said patent.

4,251,398.—*Erling Sundt;* Vessy/Ge, *Roland Aschiero;* Bernex, Ge, and *Walter Schenk;* Geneva, Switzerland. CYCLOHEXYLPENTANOLIDES AND THEIR USE IN PERFUME. Patent dated Feb. 17, 1981. Disclaimer filed May 11, 1981, by the assignee, *Firmenich SA.*

Hereby enters this disclaimer to claim 1 of said patent.

National Technical Information Services

U.S. GOVERNMENT OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent 4,249,177. Target Discrimination Apparatus. Filed May 3, 1979. Patented Feb. 3, 1981. Not available NTIS.

Patent 4,249,411. Zero-G Massmeter. Filed May 31, 1979. Patented Feb. 10, 1981. Not available NTIS.

Patent 4,251,738. Balanced Input Zero Differential Detector. Filed Aug. 10, 1978. Patented Feb. 17, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
Patent Counsel for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-169,577. Electrical Augmentation of Detonation Wave. Filed July 17, 1980.

Patent application 6-217,282. Void Filler Foam Fire Suppression System. Filed Dec. 16, 1980.

Patent application 6-226,986. Low Noise Remote Optical Fiber Sound Detector. Filed Jan. 21, 1981.

Patent 4,215,631. Sealed Pyrotechnic Delay. Filed Feb. 25, 1971. Patented Aug. 5, 1980. Not available NTIS.

Patent 4,249,422. Apparatus and Process for Determining the Composition of Fluid-Filled Cavities. Filed Oct. 22, 1979. Patented Feb. 10, 1981. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent 4,239,057. Pressure Control Valve. Filed July 13, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,240,290. Skin Friction Measuring Device for Aircraft. Filed Aug. 7, 1979. Patented Dec. 23, 1980. Not available NTIS.

TENNESSEE VALLEY AUTHORITY
Division of Law
Muscle Shoals, Al. 25660

Patent 4,238,459. Chemical Beneficiation of Phosphatic Limestone and Phosphate Rock with alpha-Hydroxysulfonic Acids. Filed June 18, 1979. Patented Dec. 9, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 27, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-15-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	10-01-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-23-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	9-24-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director .... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,134,981 to 3,139,621, inclusive

Plant Patents ..... Numbers 2,407 to 2,415, inclusive

PATENT EXAMINING CORPS

RENE D. TEGTMEYER Assistant Commissioner

WILLIAM ... Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 30, 1981

PATENT EXAMINING GROUPS

[illegible]

REISSUES

AUGUST 18, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,709
METHOD OF REMOVING IMPURITIES AND SIMILAR MATTER FROM STAPLE FIBRES IN RINGLESS SPINNING AND DEVICE FOR PERFORMING SAID METHOD

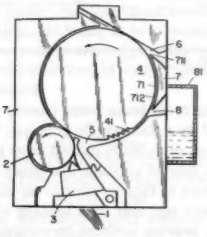
Stanislav Kabele; Ctibor Doudlebsky; Frantisek Jaros; Zdenek Svec, and Bohumir Brozek, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Original No. 3,777,466, dated Dec. 11, 1973, Ser. No. 36,883, May 13, 1970. Continuation of Ser. No. 541,412, Jan. 16, 1975, abandoned. Application for reissue May 5, 1977, Ser. No. 794,237

Claims priority, application Czechoslovakia, May 16, 1969, 3496/69

Int. Cl.[2] **D01H** *1/12*

U.S. Cl. 57—58.95 **22 Claims**



4. In an apparatus for ringless spinning of fibers, a combination comprising fiber passage means for advancement of fibers towards a spinning chamber; supply means for supplying unopened fibers into said fiber passage means; fiber opening means for opening said fibers during advancement thereof in said fiber passage means towards said spinning chamber; impurities discharge passage means communicating with said fiber passage means for continuous discharge of impurities which are liberated from the opened fibers; and suction means in open communication with said impurities discharge passage means for continuous withdrawal from the same of discharged impurities.

Re. 30,710
TIERED CONTAINER WITH FLOW DISTRIBUTION SYSTEM

Robert C. Johnson, Winston-Salem, N.C., assignor to Reynolds Leasing Corporation, Jacksonville, Fla.

Original No. 4,062,367, dated Dec. 13, 1977, Ser. No. 682,413, May 3, 1976. Application for reissue Nov. 21, 1979, Ser. No. 96,610

Int. Cl.[3] **A24B** *3/18*

U.S. Cl. 131—302 **9 Claims**

11. An improved apparatus for increasing the filling capacity of tobacco having a pressure vessel for receiving the tobacco and which utilizes a volatile organic compound to impregnate the tobacco and a hot gas to vaporize the compound in the tobacco, said improved apparatus comprising:

a stack or tier of containers mounted within said pressure vessel and comprising a plurality of spaced apart, individual containers each comprising a basket including:

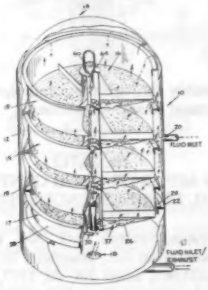
(a) a bottom with an aperture therein;

(b) a side wall secured to and circumscribing said bottom;

(c) a perforated member positioned above said bottom and within said side wall providing a flow passage between said perforated member and said bottom, said perforated member receiving a portion of the total quantity of tobacco to be processed; and

(d) a conduit communicating with the flow passage and said aperture within its basket and the aperture and flow passage of an adjacent basket, whereby a fluid can pass upwardly through said apertures into said flow passages and through the perforated members into the tobacco beds and downwardly through said beds into said flow passages and into said conduits adjacent said basket,

means operably connected to said central flow passage for supplying a volatile organic impregnating fluid upwardly through said central flow passage and substantially simultaneously upwardly and outwardly through the flow passages and perforated members of said individual containers to contact and treat tobacco confined within the individual containers with the impregnating fluid in a bottom-to-top manner, and



means operably connected to said vessel and communicating with the spaces between said individual containers for supplying a hot gas into said spaces and downwardly through the perforated members and flow passages of said individual containers and into and downwardly through said central flow passage to contact the tobacco confined within said individual containers with the hot gas in a top-to-bottom manner to vaporize the impregnating fluid and expand the tobacco.

Re. 30,711
WELL COMPLETION METHOD AND SYSTEM

George O. Suman, Jr., 3701 Kirby Dr., Suite 458, Houston, Tex. 77098

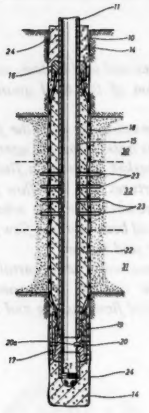
Original No. 3,918,522, dated Nov. 11, 1975, Ser. No. 437,231, Jan. 28, 1974. Application for reissue Apr. 27, 1978, Ser. No. 901,017

Int. Cl.[3] **E21B** *33/127, 33/14, 43/11*

U.S. Cl. 166—285 **8 Claims**

6. In a well system wherein a formation is penetrated by an open borehole, a packer assembly positioned in the open borehole opposite said formation, said packer assembly having a radially expansible *sleeve type* packing element **[**mounted on**]** *surrounding a portion of a mandrel* and having **[**a**]** *the extremities of said packing element in* fluid tight mechanical connection with the exterior of **[**a**]** *said* mandrel, a time setting solid mass between the mandrel and packing element in sufficient quantity that the packing element is radially expanded into *continu-*

ous supporting engagement with said formation, and at least one continuously open perforation extending from the interior of



the packer assembly through the mandrel, the solid mass and the packing element to said formation.

Re. 30,712

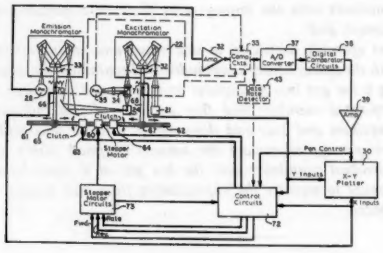
SYSTEM AND APPARATUS FOR CONTOUR PLOTTING THE TOTAL LUMINESCENCE SPECTRUM OF A SAMPLE

James H. Macemon, Severna Park, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Original No. 4,037,961, dated Jul. 26, 1977, Ser. No. 702,495, Jul. 6, 1976. Application for reissue Jun. 4, 1979, Ser. No. 45,420

Int. Cl.³ G01N *21/64*

U.S. Cl. 356—318 **5 Claims**



5. A system for producing a two-dimensional contour plot of the total luminescence spectrum of a sample comprising, in combination:

excitation means including a monochromator having a variable operating wavelength dependent on applied pulses for generating a source of monochromatic light for application to said sample;

emission detection means, including a monochromator having a variable operating wavelength dependent on applied pulses for generating an output signal dependent on the amplitude of flourescent light emitted from said sample;

an X-Y plotter including a marking pen responsive to an applied control effect and X and Y axis positioning means;

means coupled between said monochromators and said position means for controlling the position of said pen on said plotter in response to the operating wavelength of said monochromators;

pen control means responsive to the presence of a predetermined level at the output of said emission means for actuating said pen; and

scanning means for progressively scanning one of said monochromators through a predetermined range of wavelengths, and for incrementally advancing the other of said monochromators upon the completion of each such scan, to form said desired contour plot.

Re. 30,713

CROSS BEAM ROTOR

Donald L. Ferris, Newtown, and Timothy A. Krauss, Sandy Hook, both of Conn., assignors to United Technologies Corp., Hartford, Conn.

Original No. 4,087,203, dated May 2, 1978, Ser. No. 757,168, Jan. 7, 1977. Application for reissue Aug. 1, 1979, Ser. No. 62,851

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—141 **4 Claims**

1. A helicopter cross beam rotor having a pair of opposed blades supported by a common flexible spar for rotation about an axis of rotation, each blade shaped at its inner end to envelope the spar in spaced relation, the inner end of the blade having a pitch horn to receive control inputs, said blade inner end centered about said spar by a bearing assembly including first and second bearing surfaces to produce relative sliding motion between the spar and blade inner end upon blade pitch angle changes, blade lead-lag, and blade flapwise bending, wherein said first bearing surface is spherical and said second bearing surface is flat, *and wherein said second bearing surface is located closer to the spar than said first bearing surface.*

Re. 30,714

REMOVAL OF COPPER CONTAINING INCRUSTATIONS FROM FERROUS SURFACES

Lester W. Harriman, Angleton; Paul E. Muehlberg, Jackson, both of Tex., and Fred N. Teumac, Charlotte, S.C., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 3,438,811, dated Apr. 15, 1969, Ser. No. 497,530, Oct. 18, 1965. Continuation-in-part of Ser. No. 387,481, Aug. 4, 1964, abandoned. Application for reissue Sep. 14, 1978, Ser. No. 942,208

Int. Cl.³ C23G *1/14*

U.S. Cl. 134—2 **26 Claims**

1. A process for removing copper from a ferrous metal surface containing copper thereon by contacting said surface with an aqueous alkaline solution wherein the solution employed contains as an essential constituent at least one member of the group consisting of ferric chelates of [polycarboxylic] *alkylene polyamine polyacetic* acid chelating agents and mixtures of ferric and ferrous chelates of [polycarboxylic] *alkylene polyamine polyacetic* acid chelating agents in amount sufficient and for a time sufficient at a reaction temperature above about 68° F. and up to about 300° F., to dissolve said copper, *wherein said solution may also contain a salt of the group consisting of ammonium, amine, and hydroxyalkylamine salts of alkylene polyamine polyacetic acid chelating agents.*

Re. 30,715
WATER BLOCKED ELECTRIC CABLES

Leo V. Woytiuk, Pointe Claire, Canada, assignor to Northern Telecom Limited, Ottawa, Canada

Original No. 4,002,819, dated Jan. 11, 1977, Ser. No. 695,845, Jun. 14, 1976. Continuation-in-part of Ser. No. 556,294, Mar. 7, 1975, Pat. No. 4,004,077. Application for reissue Nov. 1, 1978, Ser. No. 957,046

Int. Cl.³ H01B 7/28

U.S. Cl. 174—23 C **10 Claims**

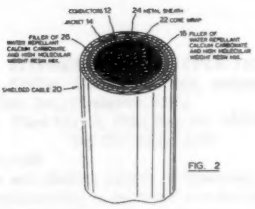

CONDUCTORS 12
JACKET 14
24 METAL SHEATH
22 CORE WRAP
FILLER OF 26 WATER REPELLANT CALCIUM CARBONATE AND HIGH MOLECULAR WEIGHT RESIN MIX
15 FILLER OF WATER REPELLANT CALCIUM CARBONATE AND HIGH MOLECULAR WEIGHT RESIN MIX
SHIELDED CABLE 20

FIG. 2

1. An electric cable having a core of a plurality of insulated conductors and a jacket, the interstices between the conductors and within the jacket being at least partially filled with a mixture of water repellant treated calcium carbonate and at least one high molecular weight resin rapidly hydratable to form a viscous solution.

Re. 30,716
SWITCH ACTIVATING HINGE HAVING RECIPROCATING CAM FOLLOWER SWITCH ACTUATOR

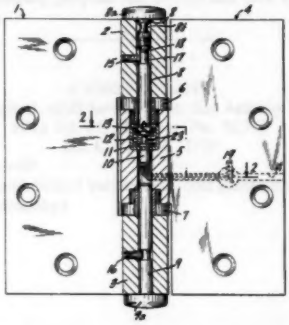
Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Original No. 4,066,857, dated Jan. 3, 1978, Ser. No. 598,716, Jul. 24, 1975. Application for reissue Aug. 10, 1978, Ser. No. 932,760

Int. Cl.³ H01H 3/16

U.S. Cl. 200—61.7 **8 Claims**

5. A hinge construction comprising first and second pivotally connected hinge leafs, each said leaf including means adapting same for attachment to a door or a door frame, or the like, each leaf further including at least one knuckle which is disposed adjacent to and is movable relative to the knuckle on the other of said leaves, an electrical circuit component carried by one of said knuckles, actuator means associated with said circuit component, and capable of producing a change in condition thereof, operating means carried by the other of said knuckles, such that upon movement of said hinge leaves relative to each other, said operating means will be moved relative to said circuit component and said actuator means to operate said actuator means and thereby produce a change in the condition of said electrical circuit component, which change in condition may be used as an indication of a change in the relative orientation of said hinge leaves, said actuator means comprising a movable plunger on said component for altering the condition thereof, and piston means non-rotatably mounted with respect to said circuit component, but being movable axially with respect to said circuit component for engagement and operation of said plunger, said piston means including cam means on the end thereof remote from said circuit component, said operating means carried by the other of said hinge knuckles comprising a member adapted to be fixedly positioned with respect to said other knuckle for movement therewith relative to said circuit component and said piston means; said member including cam means formed thereon engageable with the cam means on piston means to produce axial movement thereof and operation of said plunger, as an incident to movement of said hinge leaves.



PLANT PATENTS

GRANTED AUGUST 18, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,758

FLOWERING CRABAPPLE TREE

William H. Collins, Circleville, Ohio, assignor to American Garden Cole, Inc., Circleville, Ohio

Filed May 5, 1980, Ser. No. 146,781
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of flowering crabapple tree, Malus sp., substantially as described and illustrated, characterized by its rapid growth habit of numerous, compact, sturdy, upright branches, branching freely at the base; attractive purplish red foliage, appearing resistant to scab and mildew; and sparse but pleasing purplish red flowers and dark red to deep purple fruits.

4,759

CAMOTE PLANT

Steven H. Pollock, 6738 Spring Brook, San Antonio, Tex. 78249

Filed Jul. 11, 1979, Ser. No. 56,772
Int. Cl.[3] A01H *15/00*
U.S. Cl. Plt.—89 **1 Claim**

1. A new and distinct variety of camote plant substantially as shown and described.

PATENTS

GRANTED AUG. 18, 1981

ERRATA

For CLASS	See PATENT NO.
354–025	4,283,863
411–340	4,283,986
493–004	4,283,998
105–310	4,284,001
411–119	4,284,114
294–152	4,284,219
254–271	4,284,253
369–063	4,284,279
585–006	4,284,522
564–365	4,284,587
252–609	4,284,732
370–081	4,284,850

PATENTS

GRANTED AUG. 18, 1903

INDEX

PATENTS

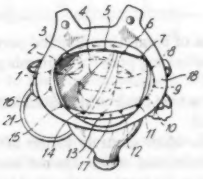
GRANTED AUGUST 18, 1981

GENERAL AND MECHANICAL

4,283,797
VIDEO BOW TIE
Murray Seider, 402 Ocean Pkwy., Brooklyn, N.Y. 11218
Filed Feb. 6, 1964, Ser. No. 343,037
The portion of the term of this patent subsequent to Aug. 18, 1985, has been disclaimed.
Int. Cl.[3] A43D *25/02*; G09F *21/02*; F21L *15/14*
U.S. Cl. 2—151 **12 Claims**

1. A novelty bow necktie structure comprising a narrow strip of fabric folded into juxtaposed folds, a tube sleeved around the folds midway the ends thereof, an electric lamp structure supported and concealed within the confines of the tube, conductors connected at one end to the lamp structure, an electric battery connected to the other ends of the conductors, and a flexible band connected at one end to the fabric for fastening the strip around the neck of the wearer, the outer surface of the outermost fold having removable indicia thereon adapted to be illuminated by the lamp structure.

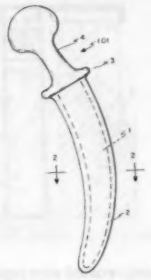
4,283,798
ATTITUDE INDICATOR FOR DIVERS
Lorne A. Kuehn, Downsview, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Division of Ser. No. 887,771, Mar. 17, 1978, Pat. No. 4,172,327. This application Aug. 1, 1979, Ser. No. 62,627
Claims priority, application Canada, Apr. 22, 1977, 276795
Int. Cl.[3] A61F *9/02*
U.S. Cl. 2—426 **3 Claims**



1. Diver's headwear comprising a body portion having means for securing it to a person's head;
- a window opening in said body portion, to be positioned in use so as to enable the diver to see through it;
- a transparent window sealedly mounted in said window opening; and
- a multiplicity of illuminating means disposed peripherally of said window opening, said illuminating means being connectible to an electrical circuit to energize the illuminating means selectively, illumination from the selectively energized illuminating means simulating natural daylight from above to the diver when underwater, thereby enabling said diver to sense visually and instinctively vertical and horizontal directions relative to his own orientation in the water.

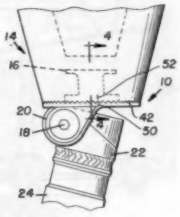
4,283,799
PRE-COATED BODY IMPLANT
George W. Pratt, Jr., Wayland; Robert Poss, Marblehead, and Jeremy K. Chung, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Sep. 10, 1979, Ser. No. 73,834
Int. Cl.[3] A61F *1/00, 1/03*
U.S. Cl. 3—1.913 **4 Claims**

1. A method of implanting a prosthesis into a skeletal member of a human, that comprises: preparing a cavity in the skeletal member to receive the prosthesis which comprises a stem that is introduced into said cavity, covering the surface of the cavity with a cement coating, applying a cement pre-coating to said stem prior to insertion into said cavity, permitting the



cement both in the cavity and on the stem to cure, applying a further quantity of the cement into the cavity and introducing the stem into the cavity.

4,283,800
ADJUSTABLE PROSTHETIC ELEMENT
Michael T. Wilson, 1259 Monument Blvd., Concord, Calif. 94520
Filed Mar. 19, 1979, Ser. No. 11,126
Int. Cl.[3] A61F *1/08*
U.S. Cl. 3—21 **7 Claims**

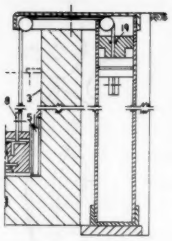


1. A prosthesis comprising:
- a prosthetic element adapted on the inferior side for fixture to a second inferior prosthetic element and having formed on the superior side and in the transverse plane a toothed surface;
- a socket molded for mating with said toothed surface; and,
- means molded in said socket for fixing said socket to said prosthetic element;
- said toothed surface permitting incremental rotation about an axis perpendicular to the transverse plane of said socket relative to said prosthetic element.

4,283,801
HYDRAULIC CYLINDER FOR MULTILEVEL SUBMERSIBLE SAFETY DECK OR DECKS FOR POOLS
Francis C. Smith, 9 Glenview Rd., Strathmore, Victoria 3041, Australia
Filed Feb. 27, 1978, Ser. No. 881,545
Claims priority, application Australia, Mar. 8, 1977, 9320/77
Int. Cl.[3] E04H *3/16*
U.S. Cl. 4—496 **2 Claims**

1. In either an in or above ground pool provided with walls

including single acting low pressure hydraulic cylinders externally and stationary positioned relative to and approximately flush with the head and base of said walls which can be used to control the level of a rigid traversible deck or decks in said pool with an inverted reaction through the novel use of a



circular flexible plastic-coated wire rope sealed with "O" rings as the transfer medium of the applied hydraulic force within the cylinders and said plastic-coated rope is guided by pulleys supported by an extended arm on cylinder caps provided over the wall to connect to the decks and this extended arm can be clear of the wall when such a condition is required.

4,283,802

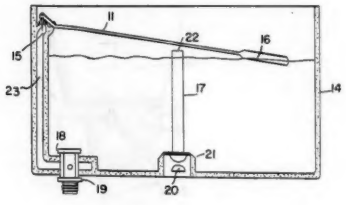
TOILET TANKS WITH BUILT-IN WATER SUPPLY VALVE

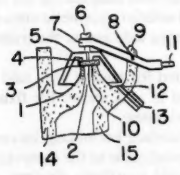
Andres A. Y. Icaran, Monterrey, Mexico, assignor to Nacional de Ceramica, S.A., Monterrey, Mexico

Filed Jul. 16, 1979, Ser. No. 57,653

Int. Cl.³ E03D *1/00, 1/32*

U.S. Cl. 4—353 **10 Claims**





1. A toilet tank comprising

a tank having unitary walls and base;

an inlet duct formed as a unitary portion of one of said tank walls, said inlet duct having an inlet valve at an upper end thereof and means for coupling said inlet duct to a water supply at a lower end thereof, said inlet valve having a valve seat formed as a unitary portion of said upper end of said inlet duct with a bore therethrough which communicates with the inside of said inlet duct; and

an overflow duct formed as a unitary portion of one of said tank walls; said overflow duct having an open mouth at an upper end thereof at a predetermined position in said tank and means for connecting said overflow duct to a toilet basin at a lower end thereof.

4,283,803

PROCESS FOR IMMERSING IN A SWIMMING POOL DISABLED PERSONS USING A WHEELCHAIR

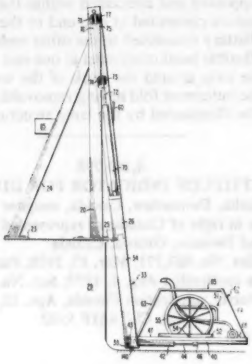
Keith Krumbeck, Milwaukee, Wis., assignor to The Cheney Company, Inc., New Berlin, Wis.

Continuation of Ser. No. 801,466, May 31, 1977, Pat. No. 4,141,089. This application Feb. 14, 1979, Ser. No. 12,058

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ E04H *3/19*; B66B *9/00*

U.S. Cl. 4—496 **3 Claims**



1. A process of immersing disabled persons who use a wheel chair into a swimming pool for swimming therein, said process comprising:

wheeling a wheel chair with a disabled person thereon onto a chair lift;

attaching the chair securely to the lift so that the chair remains secure and stable against buoyancy effects when immersed in the pool and the disabled person swims away from the chair;

lowering the lift and attached chair with disabled person into the pool and enabling the person to swim away from the attached chair while the unoccupied chair remains attached to the lift in a secure and stable condition so that the unoccupied chair can be elevated or the person can swim back to the immersed chair and reseat himself thereon;

elevating the chair lift with the unoccupied attached chair while the person is swimming in the pool, lowering the chair lift and unoccupied attached chair in order to enable the swimmer to return to the chair, and, thereupon, elevating the chair and swimmer from the pool;

whereby disabled persons can be immersed in a swimming pool within their individual capabilities to swim away from and return to the secured wheel chairs without the assistance of an attendant.

4,283,804

SWIMMING POOL STRUCTURE

Morgan D. Mahoney, P.O. Box 69, Hastings, Ontario, Canada (K0L 1Y0)

Continuation of Ser. No. 960,185, Nov. 13, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,715

Int. Cl.³ E04H *3/18*

U.S. Cl. 4—506 Q **5 Claims**

1. Above ground pool framework comprising:

means defining substantially straight side walls for the pool,

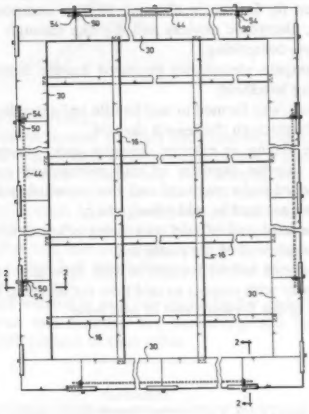
means preventing outward movement of the lower portion of such side walls under water pressure,

a deck structure comprising members designed to be attached to a side wall adjacent the upper edge of such side wall,

said deck members each including a wall arranged to extend approximately horizontally outwardly relative to the side wall to which said deck member is attached,

said deck members being arranged end to end along a side wall, said horizontally extending walls corresponding to a side wall, attached together to form a connected unit,

tensioning means corresponding to a side wall located beneath said horizontally extending deck wall and attached



only at each end to the horizontally extending walls of different deck members attached to the corresponding side wall,

said tensioning means extending in a straight line between said ends and generally longitudinally relative to said side walls,

said attached ends being located nearer the outer than the inner edge of said horizontally extending deck walls,

said tension members being adjustable in length whereby the outer portions of the corresponding deck member horizontal walls may be placed in compression and the inner portion of said horizontal walls placed in tension by shortening said tension members.

4,283,805

HORSE HOOF PICK

Larry C. Stacy, 4851 S. Mission, Fallbrook, Calif. 92028

Filed Oct. 22, 1979, Ser. No. 87,003

Int. Cl.[3] B25B *7/22*

U.S. Cl. 7—127 **5 Claims**

1. Horse hoof pick comprising a first arm having front and rear portions and a second arm of unequal length to said first arm and having pivot connection to said first arm intermediate its said end portions, said first arm defining at its front end portion a hoof picking head comprising a hook terminally pointed and rearwardly tapered in the plane of said first arm insertable between the frog and horn portions of the horse's hoof, said second arm being angularly adjustable relative to the rear end portion of said first arm to define a hand-gripping means for said pick variable between a narrow first and second arm spread for prying picking action against accumulated matter, and a wide arm spread for facilitated torque twisting

picking action against said matter in first arm plane rotating relation.

4,283,806

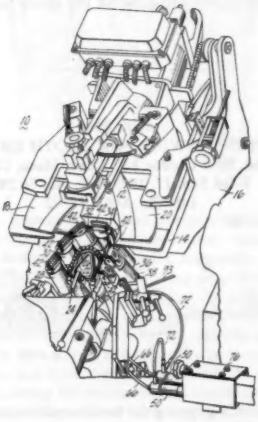
SHOE MACHINE AIR BLAST MECHANISM AND AIR BLAST SAFETY DEVICE

Alphonse C. Kulik, Ipswich, Mass., and Josef J. Walter, Johnson City, N.Y., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 12, 1979, Ser. No. 47,829

Int. Cl.[3] A43D *9/00, 21/00, 23/00*

U.S. Cl. 12—142 R **7 Claims**



1. A machine for lasting shoes in which the margin of a shoe upper is secured to the bottom of an insole by cement applied along the margin of the forepart of the insole bottom including:

a nozzle engageable generally along at least portions of the bottom margin of said insole, for applying molten cement to said insole;

a cement feed apparatus for supplying molten cement to said nozzle; and

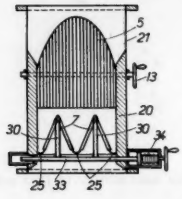
a safety apparatus for preventing any molten cement from being discharged from said nozzle when an insole and an upper are absent nozzle, said safety apparatus comprising a reciprocably movable pincer having a set of jaws with which to grab and tension said upper, and which senses any absence of an insole and upper therewith to effect the shutting off said cement feed apparatus.

4,283,807

CLEANING OF HEAT EXCHANGERS COMPOSED OF TUBES

Andre G. M. A. Bizard, Paris, France, assignor to Technos, Paris, France

Filed Sep. 28, 1979, Ser. No. 80,144
Claims priority, application France, Oct. 11, 1978, 7829014
Int. Cl.[3] B01D 35/02; B08B 9/04
U.S. Cl. 15—3.51 9 Claims



1. A device for cleaning a heat exchanger, having tubes through which a heat exchanging fluid flows, comprising:

(a) at least one grid having bar means, located downstream of the tubes, for separating balls from the flow of the heat exchanging fluid after passage through the tubes;

(b) at least one movable comb having teeth means for passing through the space between the bar means of said at least one grid; and

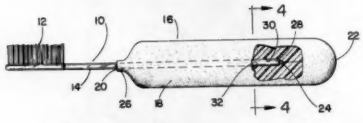
(c) means for moving said at least one movable comb between an operative position, in which the teeth means pass through the space between the bar means so as to clean said at least one grid, and an inoperative position, in which the teeth means are clear of the space between the bar means.

4,283,808

GRIPPING DEVICE FOR TOOTH BRUSHES

Lee M. Beebe, 2089 Garden La., Costa Mesa, Calif. 92627

Filed Sep. 17, 1979, Ser. No. 76,248
Int. Cl.[3] A46B 17/02
U.S. Cl. 15—145 1 Claim



1. A removable gripping device in combination with a tooth brush, comprising:

an elongated body having an open end and a closed end, said body being formed from a pliable foam plastic material;

a slot centrally positioned longitudinally from said open end to a point adjacent the closed rear end, and adapted to receive the handle portion of said tooth brush, said slot having opposing surfaces to frictionally engage said tooth-brush handle, whereby said body is removably mounted to said tooth-brush handle, said body being provided with a substantially cylindrical cross sectional configuration having a sufficient diameter to be grasped in one's hand;

said open end of said body formed to include a protruding lip portion; and

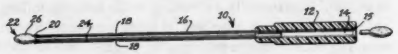
said body including a cover member formed thereon to encapsulate said body, said cover member being impervious to water.

4,283,809

SWAB HOLDING TOOL

Claude D. Prost, 4009 Port Cleburne La., Hermitage, Tenn. 37076

Filed Nov. 5, 1979, Ser. No. 91,456
Int. Cl.[3] A46B 17/02
U.S. Cl. 15—145 9 Claims



1. A tool for holding a swab having an elongate rod with an absorbent tip for use in cleaning interior components of machinery, electronic devices and the like through narrow passageways, comprising:

an elongate electrically insulated handle dimensioned for being handheld;

a passageway formed in said handle and extending longitudinally through the length thereof;

a tube having an exterior diameter approximately equal to the interior diameter of said passageway and having a forward and a rearward end, the rearward end of said tube being secured in said passageway;

the forward end of said tool being adapted to receive the elongate rod of the swab, and

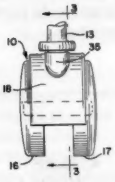
at least one indent formed in said tube and extending inwardly with respect to said tube for securing the elongate rod in the forward end of said tube.

4,283,810

DUAL WHEEL CASTER BODY STRUCTURE

Carl J. Demrick, Birmingham, Mich., assignor to Herder N.V., Willemstat, Netherlands Antilles

Filed Feb. 28, 1979, Ser. No. 16,095
Int. Cl.[3] B60B 33/00
U.S. Cl. 16—47 9 Claims



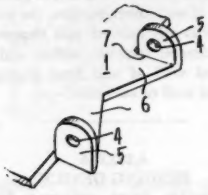
1. A caster body structure comprised of a body frame member and a separate wheel cover member, said body frame member having multi-plate structure throughout a major portion of the member, a horizontal axle bearing formed in the multi-plate structure, a vertical swivel stem socket formed integrally as a part of each plate of said multi-plate structure and extending upwardly through said wheel cover member, one of said swivel stem sockets comprising a cylindrical well portion and the other swivel stem socket comprising a socket portion nested in such well portion, and a pair of supporting wheels mounted on an axle extending through said bearing, said multi-plate structure being disposed between said supporting wheels.

4,283,811

IMPROVED KNUCKLE HINGE

Peter J. George, 8 Myrtle Grove, Altona, 3018, Victoria, Australia

Filed Aug. 3, 1978, Ser. No. 930,714
Int. Cl.³ E05D *15/00*
U.S. Cl. 16—128 R **5 Claims**



1. A hinge comprising:

a pair of leaves formed of sheet-like material, each of said leaves having at least a pair of triangularly shaped webs extending from a longitudinal side thereof and having terminal ends formed to provide sheet-like tabs oriented generally normal to the leaf, said pair of leaves being juxtapositioned so as to be rotatable about a common axis and so that said tabs are contiguous, with at least one of the tabs of one leaf supporting at least one of the tabs of the other leaf; and

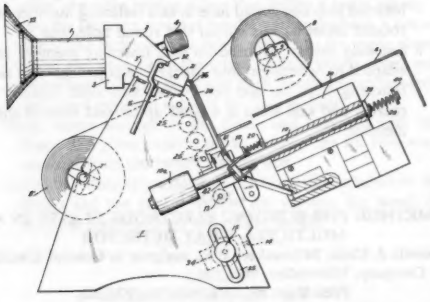
pivot means located at said common axis for coupling said contiguous tabs together for permitting said leaves to rotate with respect to each other.

4,283,812

MACHINE FOR MAKING MEAT PATTIES

Gumersindo P. Corominas, 15 Mirador St. OLOT, Gerona, Spain

Filed Aug. 29, 1979, Ser. No. 70,911
Claims priority, application Spain, Aug. 31, 1978, 238.001
Int. Cl.³ A22C *7/00*
U.S. Cl. 17—32 **7 Claims**



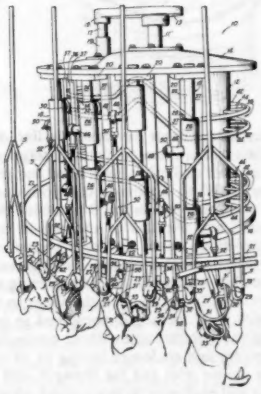
1. A machine for making meat patties, which comprises a machine frame defining an inclined slideway including a bed at an output end thereof, a feed member mounted on the machine frame at an upper input end of the slideway, the feed member having an inlet for receiving ground meat and an outlet discharging a layer of the ground meat to the upper input end of the slideway, the slideway being capable of gravity-feeding the layer of ground meat from the input to the output end of the slideway, two supply rolls of sheet material freely rotatably supported at a front and a rear of the machine frame, respectively, for delivering two continuous supplies of the sheet material to the slideway on respective sides of the layer of ground meat whereby the ground meat layer with the sheet material covering the two sides thereof are gravity-fed down the slideway, a sensing element projecting into the slideway at the output end thereof and arranged to sense a forward edge of the gravity-fed layer of ground meat covered on both sides with the sheet material and to emit a control signal on contact with the forward edge of the layer of ground meat and sheet material, means for adjusting the position of the sensing element with respect to the output end whereby the length of the cut meat patties may be controlled, an electronically controlled knife assembly operable in response to the control signal, the assembly including a knife movable into the slideway to cut the layer of ground meat and the sheet material in response to the control signal and an electromagnet controlling the knife movement, and a driven ejector roller at the output end of the slideway for feeding the cut layer of ground meat covered on both sides by the sheet material to the bed.

4,283,813

POULTRY INSPECTION APPARATUS AND METHOD

James B. House, Gainesville, Ga., assignor to Stork Gamco, Inc., Gainesville, Ga.

Filed Dec. 3, 1979, Ser. No. 99,640
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—45 **17 Claims**



1. A poultry inspection method comprising continuously moving birds through an inspection station with each bird hanging head downwardly and back forwardly toward an inspector at said station, each bird having an eviscerated body cavity whose entrance faces upwardly at the entrance to the inspection station, mechanically engaging each bird within said body cavity for automatically swinging each bird upwardly until each bird in turn is held in a generally horizontal position breast upwardly and back downwardly with the entrance of the body cavity facing the inspector, and mechanically engaging the entrance portion of said body cavity at the inspection station and expanding it to a wide open condition to provide a clear unobstructed view of the interior of said cavity, including the air sac area, the sex organ area, and the kidney area, and then disengaging each bird near the exit of the inspection station so that each bird will return automatically to a head down hanging position.

9. A poultry inspection apparatus comprising a stationary frame having stationary camming means thereon, a coacting rotary frame having guided and movable cam follower means thereon defining plural spaced bird engaging mechanisms which move in synchronism with a poultry shackle line carrying plural birds suspended head downwardly from the shackles of said line, and each bird engaging mechanism comprising a first movable engaging element adapted to engage each bird with the eviscerated body cavity thereof to tilt each bird to a generally horizontal breast up position with the entrance of the body cavity facing an inspector, and each bird engaging mech-

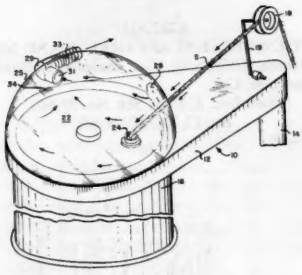
anism comprising a second movable engaging element adapted to move into the entrance of said body cavity to expand it to a wide open condition to promote visual inspection of the interior of said cavity, said first and second engaging elements responding to movements of said cam follower means.

4,283,814

METHOD AND APPARATUS FOR COILER HEAD CLEANING

David M. Ford, and Gary Setzer, both of Charlotte, N.C., assignors to Pneumafil Corporation, Charlotte, N.C.

Filed Jan. 15, 1979, Ser. No. 3,304
Int. Cl.³ B65H *54/80*
U.S. Cl. 19—159 R **17 Claims**



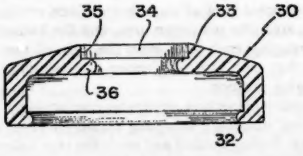
1. A coiler head cleaner for capturing lint, dust, fly and the like particulate matter released by the passage of sliver into the trumpet of a sliver coiler having a head and trumpet through which sliver is fed to a storage can positioned beneath the trumpet, so that relative rotation is produced between the axis of the trumpet and the axis of the can to produce desired coiling of the sliver in the can, said cleaner comprising: an enclosure overlying and enclosing the head and the trumpet, said enclosure having a single air inlet opening admitting air to the enclosure and through which the sliver to be coiled is fed to the trumpet, said opening dimensioned to permit free passage of the sliver therethrough without contacting the edges of the inlet opening; said enclosure having an air outlet at a point spaced from the air inlet and the trumpet; and a suction hose connected to said enclosure through which air and any particulate matter entrained therein is withdrawn from said enclosure.

4,283,815

BUTTON CONSTRUCTION

Brian H. Henshaw, 2719 Robinson St., Regina, Saskatchewan, Canada

Filed Jan. 10, 1979, Ser. No. 2,374
Claims priority, application Canada, Jun. 9, 1978, 305151
Int. Cl.³ A44B *1/18*
U.S. Cl. 24—90 A **9 Claims**



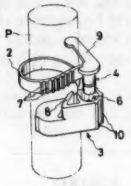
1. A button construction for dressmaking, upholstering use and the like, adapted to be covered with flexible material such as fabrics and the like; comprising in combination a button head and a attaching stem, and apertured locking disc engaging over said attaching stem, means to fixedly engage said locking disc with said head internally thereof, to hold in place, the associated flexible material covering said head and means to connect said stem and said head together, said last mentioned means comprising a stepped aperture formed centrally through said head, said aperture including an outer portion and an inner portion, the diameter of said outer portion being larger than the diameter of said inner portion, the wall defining said inner portion being convexedly curved, said stem including an upper stepped cylindrical portion having an upper portion and a lower portion, the diameter of said upper portion being larger than the diameter of said lower portion, the wall of said lower portion being concavedly curved, said stepped stem snap engaging into the stepped aperture within said head with the convexedly curved wall of said head engaging within the concavedly curved wall of said stem.

4,283,816

BINDING DEVICE

Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Mar. 17, 1980, Ser. No. 130,893
Claims priority, application Japan, Mar. 26, 1979, 54/37820
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—269 **4 Claims**



1. A binding device, comprising:
a band provided on at least one surface thereof with fastening steps,
a fastening member integrally connected to one end of said band and provided with a round hole,
a shaft member having a portion thereof integrally connected to the other end of said band and adapted to be inserted into said round hole in said fastening member and rotated about its axis within said round hole, and
a fastening means disposed on said fastening member and adapted to be brought into checked engagement with said fastening steps on said band when said shaft member is rotated and said band is wound up on said rotated shaft member.

4,283,817

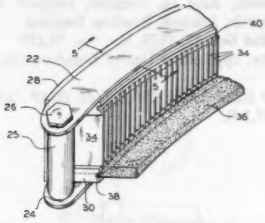
METHOD FOR BONDING ELECTRODE PLATES IN A MULTICELL X-RAY DETECTOR

Dennis J. Cotic, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 20, 1978, Ser. No. 971,202
Int. Cl.³ H01J *1/88*
U.S. Cl. 29—25.16 **7 Claims**

1. A method for securing a plurality of plates into first and second members each having a side in which there is a plurality of grooves adapted to receive one of the opposed ends of the plates, said method comprising:
positioning the members in spaced apart relationship having their grooved sides facing each other;
inserting the opposed ends of the plates into the corresponding grooves of the members;
applying a relatively non-viscous liquid adhesive into contact with one edge of each of the grooves of both members by saturating a cellular applicator with the adhesive and abutting the applicator against the members until

the adhesive flows by capillary action along the length of each groove; and



curing the adhesive thereby securing the plates into the members.

4,283,818

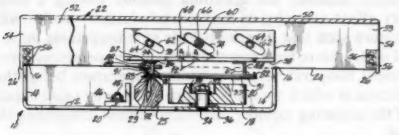
APPARATUS FOR REDUCING RACKET HANDLES

William C. Kinard, 3710 Alder La., Pasadena, Calif. 91107; Donald F. Carter, South Pasadena, and Cecil G. Young, La Canada, both of Calif., assignors to William C. Kinard, Pasadena, Calif.

Filed May 21, 1979, Ser. No. 40,698

Int. Cl.³ B23D *67/12*

U.S. Cl. 29—76 R **19 Claims**



1. An apparatus for removing material from a racket handle comprising:

a base portion having at least one pair of raised opposed sides, the sides having edges that define a guide plane;

means for securing a racket handle within the base, a center line of the racket handle being parallel to the guide plane;

a frame slideable upon the edges of said raised sides, said frame having a length greater than the separation between the raised opposed sides of the base portion;

blade means secured to the frame and movable with the frame in a plane parallel to the guide plane for removing material from the racket handle; and

means for adjustably extending the blade means between the frame and the racket handle for varying the depth of material removal from the racket handle.

4,283,819

SEGMENT-SHAPED BLADE

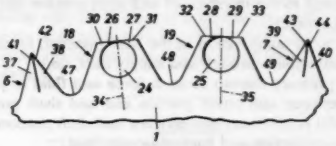
Karl Willinger, Vienna, Austria, assignor to Miba Sintermetall Aktiengesellschaft, Laakirchen, Austria

Filed Nov. 14, 1979, Ser. No. 94,068

Int. Cl.³ B23D *71/00*

U.S. Cl. 29—79 **8 Claims**

1. A segment-shaped blade for use in a cylindrical tool for machining elastic material by rotating the tool in a direction of rotation, the blade extending in a plane and having a convex periphery, which comprises a plurality of trapezoidal teeth arranged along the periphery between substantially V-shaped peripheral recesses defining the height of the teeth, each trapezoidal tooth having a radial plane of symmetry and defining a circular hole whose center lies in the plane of symmetry, and each trapezoidal tooth including two prongs bent to different sides of the plane of the blade, each prong extending between the circular hole and an adjacent one of the peripheral recesses



and having a straight outer edge tangential to the circular hole and perpendicular to the plane of symmetry.

4,283,820

SEGMENT-SHAPED BLADE

Karl Willinger, Vienna, Austria, assignor to Miba Sintermetall Aktiengesellschaft, Laakirchen, Austria

Filed Nov. 14, 1979, Ser. No. 94,071

Int. Cl.³ B23D *71/00*

U.S. Cl. 29—79 **4 Claims**

1. A segment-shaped blade for use in a cylindrical tool for machining elastic material by rotating the tool in a direction of rotation, the blade extending in a plane and having a convex periphery extending in a curved plane perpendicular to the plane of the blade, which comprises a plurality of triangular teeth arranged along the periphery between peripheral recesses, each triangular tooth having a root in another curved plane inwardly spaced from, and substantially parallel to, the curved plane wherein the periphery of the blade extends, and each tooth being divided by a substantially radial cut extending no farther than the root of the tooth into prongs having pointed tips, at least alternating ones of the prongs being bent to a side of the plane of the blade and the pointed tips of all prongs lying in the curved plane wherein the periphery of the blade extends and laterally staggered from each other in relation to the plane of the blade.

4,283,821

METHOD FOR PRODUCING FIBER ROLLS

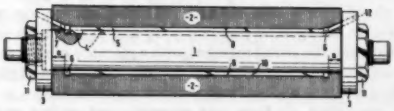
Eero Paakkunainen, Järvenpää, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

Filed Dec. 13, 1979, Ser. No. 103,220

Claims priority, application Finland, Dec. 29, 1978, 784040

Int. Cl.³ B21D *39/18*; B29C *27/00*; B29D *3/00, 31/00*

U.S. Cl. 29—129 **11 Claims**



1. In a method for producing a fiber roll usable as a calender roll, the roll comprising a load carrying shaft portion and thereon a cover portion made of fiber material forming the outer portion of said roll, said cover portion being made by

strong compression of the fiber material, in an axial direction of the roll, of a great number of annular fiber material sheets fitted on said shaft portion, said method including the steps of:

making at least one supply duct leading from an end portion to said roll to the interface of said shaft portion and said cover portion,

after said axial compression of the fiber material, feeding a hardenable fluid through said supply duct, and

applying pressure thereto so as to force said fluid to penetrate between said cover portion and said shaft portion and to fill possible cavities between said shaft portion and said cover portion and hardening said fluid.

4,283,822

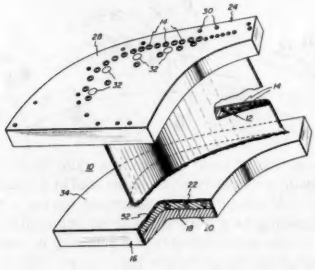
METHOD OF FABRICATING COMPOSITE NOZZLES FOR WATER COOLED GAS TURBINES

Myron C. Muth, Amsterdam; William F. Schilling, Rexford; Edwin L. Teaney, Schenectady, and Leo C. Willmott, Ballston Spa, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,681

Int. Cl.³ B23P *15/04*; B23K *20/14*

U.S. Cl. 29—156.8 H **5 Claims**



1. An improved method of making a water-cooled turbine nozzle comprising the steps of:

(a) forming a copper or copper alloy airfoil core having longitudinal holes extending through said core at predetermined locations, and placing a first plurality of cooling tubes in said holes;

(b) forming a top endwall having a composite structure comprising a first upper layer of stainless steel and a first lower layer of high thermal conductivity copper consolidated from metal powder, said endwall having a second plurality of cooling tubes embedded in said first lower layer and extending through said first upper layer;

(c) forming a bottom endwall having a composite structure comprising a second lower layer of stainless steel and a second upper layer of high thermal conductivity copper consolidated from metal powder, said endwall having a third plurality of cooling tubes embedded in said second upper layer and extending through said second lower layer;

(d) preforming a corrosion resistant outer cladding in the shape of a hollow body open at both ends and having substantially the external dimensions of said nozzle;

(e) placing the bottom endwall, the airfoil and the top endwall in said hollow cladding body and joining both endwalls and the airfoil together with a plurality of spar rods;

(f) welding said spar rods, said cooling tubes and said cladding body to said endwalls to form an assembly;

(g) evacuating air from said assembly and sealing under vacuum;

(h) diffusion bonding said assembly under hot isostatic pressure; and

(i) machining said bonded assembly to the finished product.

4,283,823

METHOD OF MAKING AN ACTUATING MEMBER FOR A THERMOSTATICALLY CONTROLLED VALVE

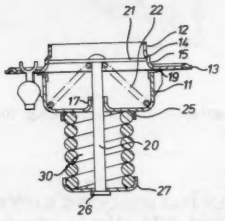
Robert E. Buswell, Reading, England, assignor to Western Thomson Controls, Limited, Reading, England

Filed Sep. 13, 1979, Ser. No. 75,119

Claims priority, application United Kingdom, Sep. 22, 1978, 37741/78

Int. Cl.³ B23P *13/00*; F01P *7/16*; B23P *15/00*

U.S. Cl. 29—157.1 R **5 Claims**



1. In a method of making a thermostatically controlled valve having a body provided with a valve seat, a closure member mounted for guided movement relative to the body into and out of engagement with the valve seat to open and close the valve, means biasing the closure member to the closed portion, and a temperature-responsive actuating member operatively connected to the body and the closure member for actuating the closure member, the actuating member having a shape memory effect whereby its modulus of elasticity varies with temperature such that it expands little at temperatures up to a critical temperature but expands rapidly at temperatures above the critical temperature, the critical temperature being that temperature at which the valve begins to open by rapid expansion of the actuating member, the improvement comprising the steps of:

(a) forming the actuating member with a length greater at said critical temperature than a predetermined length required to hold the closure member in the start-to-open position of the valve,

(b) heating the actuating member to its critical temperature, and

(c) removing excess material from the actuating member while it is at its critical temperature so as to reduce the length of the actuating member to the said predetermined length.

4,283,824

METHOD FOR MANUFACTURING HEAT EXCHANGER TUBING

Friedrich Schatz, and Gerhard Ziemek, both of Langenhagen, Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshuette AG, Hanover, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,707

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837184

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.4 **4 Claims**

1. A method for manufacturing heat exchanger tubing having a plurality of spaced apart transverse grooves impressed into its outer surfaces, comprising the steps of:

deforming a metal band in a longitudinal direction into a tubular member;

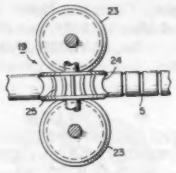
continuously welding the longitudinal edges of said tubular member to form a tubular member having a longitudinally welded seam;

continuously impressing spaced apart transverse grooves into the outer surface of said welded tubular member by means of a groove forming roller means;

transversely cutting said tubular member along smooth

portions of said tubular member between adjacent transverse grooves to provide discrete tube lengths; and

expanding the interior cross section of the end portions of



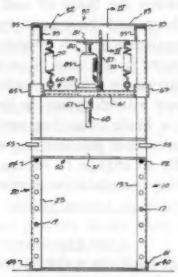
each of said tube lengths to form a symmetrical polygon each side of which is positioned in a radial direction beyond the outer surface of the portion of said tube length between said end portions.

4,283,825

HEAVY DUTY PRESS

John McKay, and Billy C. Hawkins, both of 41 Hampton Arms, Greenville, S.C. 29607

Filed Sep. 4, 1979, Ser. No. 72,065
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—251 **10 Claims**



1. An improved heavy duty press comprising:

(a) a pair of spaced apart vertical support members, each said support member having a generally U-shaped configuration and defining an elongated slot in a base of the U, said slots being opposite each other;

(b) stabilizing means secured to said vertical support members at a lower end thereof;

(c) a horizontal support member received between said vertical support members and secured thereto along contiguous surfaces of said vertical and horizontal members;

(d) a work support table secured between said vertical support members, said work support table being adapted for vertical adjustment along a portion of said vertical support members;

(e) a carriage assembly received between said vertical support members above said work support table and being guideably movable in the plane of said vertical support members, said carriage assembly having a work element associated therewith;

(f) spring means secured between said horizontal support member and said carriage assembly, said spring means biasing said carriage assembly in a direction toward said horizontal support member;

(g) power means received between said horizontal support member and said carriage assembly, said power means being operable to move said carriage assembly against the bias of said spring means to bring said work element into contact with a workpiece received at said work support table; and

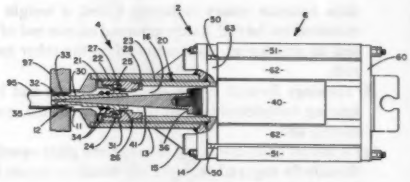
(h) workpiece holding means receivable within the generally U-shaped configuration of said vertical support members along said elongated vertical slots, said holding means being adapted to receive a portion of an elongated workpiece adjacent at least one of said elongated slots and hold same against rotation when acted upon by said work element.

4,283,826

TUBE EXTRACTING MECHANISM

Charlie D. Miller, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 907,239, May 18, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,549
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—252 **15 Claims**



1. A tube extracting mechanism comprising:

an elongated frame defining an opening in the front end thereof and a longitudinally extending passageway in communication with the opening;

a back plate located rearward of the frame;

a mid plate located between the back plate and the frame;

connecting means connecting the back and mid plates for unitary longitudinal movement;

a sleeve positioned in the passageway, slidably supported by the frame for longitudinal movement within the passageway in a first direction towards the opening and in a second direction away from the opening, and connected to the mid plate for unitary longitudinal movement therewith;

expandable jaw means supported by the sleeve for longitudinal movement therewith, wherein the jaw means is movable through the opening;

expansion means in communication with the expandable jaw means for expanding the jaw means, wherein longitudinal movement of the expansion means in the first direction expands the jaw means;

expansion power means connected to the back plate for unitary longitudinal movement therewith, and connected to the expansion means for imparting longitudinal movement in the first direction to the expansion means; and

pulling power means connected to the frame and the back plate for imparting longitudinal movement in the second direction to the back plate, the mid plate, the sleeve, and the expandable jaw means.

4,283,827

TOOL FOR REMOVING AXLE SPINDLES

Oliver R. Abel, 1831 Broad Ave. NW., Canton, Ohio 44708

Filed Sep. 4, 1979, Ser. No. 72,485
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—254 **5 Claims**

1. An improved tool construction for removing a spindle from an axle housing including:

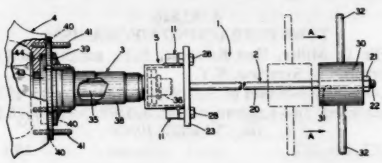
(a) a housing having side wall means terminating in an open first end and an opposite axially spaced second end;

(b) end wall means mounted on the second end of the side wall means;

(c) a circular opening formed in the center of the end wall means adapted to receive an end of a spindle therethrough;

(d) a plurality of lug means provided on the housing side wall means adjacent the open first end and spaced equally circumferentially about said open end;

(e) slide hammer means mounted on the housing and attached to the lug means for applying an axial force on said housing to remove the spindle from the axle housing, said



slide hammer means including a rod, a weight slidably mounted on the rod, a stop mounted on one end of the rod, and an attachment plate mounted on the other end of the rod;

(f) openings formed in the attachment plate and having a spacing complementary to the spacing of the spaced lug means; and

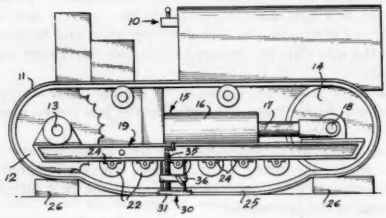
(g) a pair of bolts extending through the plate openings and threadedly engaged with the lug means to mount the slide hammer means on the housing.

4,283,828

ENDLESS TRACK SUPPORT TOOL

Wilbur C. Cole, Sr., 360 Fort Lewis Blvd., Salem, Va. 24153

Filed Jan. 7, 1980, Ser. No. 110,154
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—256 **6 Claims**



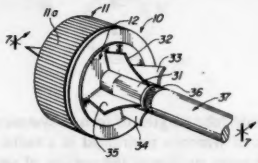
1. A portable apparatus for removing and replacing a support and guidance roller on a vehicle having an endless track, comprising a base, a travelling block means adjustably mounted on said base, a first adjusting means for moving said travelling block means relative to said base in a generally vertical direction, a second adjusting means carried by said travelling block means for movement in a horizontal direction, cradle means carried by said second adjusting means and being movable toward and from said travelling block means selectively, first guide means for guiding said travelling block means relative to said base, second guide means for guiding said cradle means relative to said travelling block means, means for stabilizing said base in a direction parallel to said second guide means when said first guide means is engaged, and means for selectively operating said first and second adjusting means, whereby said cradle means may be moved into intimate supporting engagement with a support and guidance roller mounted on a vehicle and thereafter the apparatus is operated to remove the roller from the vehicle.

4,283,829

PROTECTIVE DEVICE FOR MOUNTING BLADES ON ARROWHEAD

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed May 14, 1979, Ser. No. 38,495
Int. Cl.³ B25B *27/14*
U.S. Cl. 29—278 **7 Claims**



1. A hand-held protective device to facilitate the safe loading of blade elements into an arrowhead, said device comprising

a spool-like body formed with a principal central bore extending axially into said body,

an array of spaced blade receiving slots formed in said body, said slots communicating with and extending radially from said central bore at selectable arcuate spacings from one another within the body of said device along the length of said bore, and the arcuate spacing of said slots being in correspondence with arcuate spacing of blade elements as secured in the head of an arrow, and

a protuberance carried by a wall bounding each said slots, said protuberance extending into to invade said slot and terminating in a blade engaging surface for abutment against a face of a blade inserted into each of said slots,

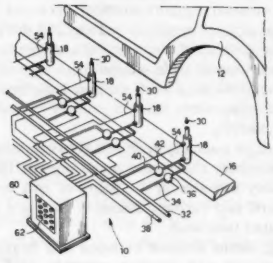
thereby frictionally to engage to secure the blades within said device during manipulation thereof.

4,283,830

METHOD AND APPARATUS OF MONITORING THE SCREWING HOME OF A THREADED ELEMENT BY A POWER TOOL

Gabriele Gallizio, Turin, and Giovanni Balestrino, Orbassano, both of Italy, assignors to Centro Richerche Fiat S.p.A., Orbassano, Italy

Filed Jun. 12, 1979, Ser. No. 47,965
Claims priority, application Italy, Sep. 27, 1978, 69226 A/78
Int. Cl.³ B25B *23/14*
U.S. Cl. 29—407 **8 Claims**



1. A method of monitoring the screwing home of a threaded element by a power tool, the method comprising the steps of:

measuring the number of revolutions made by the threaded element during the operation of screwing home the element,

subdividing the duration of the screwing operation into a plurality of intervals, and

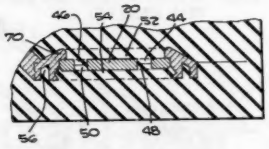
verifying that the number of revolutions made by the threaded element from the beginning of the screwing operation up to the end of each time interval lies between two threshold values respectively corresponding to a maximum and a minimum number of revolutions acceptable at that stage during the screwing operation.

4,283,831

METHOD OF MANUFACTURING AND INTERLOCKING JEWELRY WITH PRECISE PREFORMS

Shigeru Jhono, Los Angeles, Calif., assignor to Tempo G, Los Angeles, Calif.

Filed May 5, 1980, Ser. No. 146,488
Int. Cl.³ B22C *9/04*
U.S. Cl. 29—423 **18 Claims**



12. In the art of casting metal so that the finished casting will hold precise dimensions in certain critical areas to enable the finished casting to be used as a frame for encasing an object of precise dimensions, the method of making the frame metal casting comprising the steps of:

a. selecting an object to be encased in a metal frame;

b. selecting an original casting model containing a cavity disposed therein;

c. forming an interior portion of the inner wall adjacent said cavity of said casting model to dimensions which are substantially one percent larger than the dimensions of said object to be encased.

d. selecting a model form key whose dimensions are substantially one percent larger than said object to be encased;

e. placing said model form key in said cavity of said casting model and rigidly attaching said model form key to said inner wall of said casting model;

f. attaching the end of a rod to a portion of said casting model;

g. placing said casting model with said rod and said model form key attached into a mold, surrounding said casting model and attachments with a material of yieldable consistency and solidifying said material in the form of a completed first stage mold;

h. separating said first stage mold into opposite complementary portions and allowing a section of one edge to remain intact so that the two complementary portions can be fit together precisely;

i. removing said casting model and attachment and placing a duplicate model form key in the area of said first stage mold where said model form key was located inside said casting model;

j. closing both portions of said first stage mold with said duplicate model form key inside and injecting casting wax into said first stage mold so that the wax surrounds said duplicate model form key and forms a wax pattern inside said first stage mold;

k. removing said wax pattern from said first stage mold;

l. then removing said duplicate model form key from said wax pattern and surrounding said wax pattern with casting investment compound;

m. extracting the material of said wax pattern to leave a formed investment;

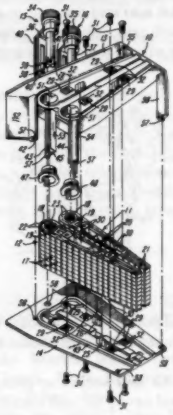
n. casting molten metal in said formed investment to form a finished casting to be used as the frame for said object.

4,283,832

METHOD OF MAKING PRINT HEAD ASSEMBLY

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 23, 1979, Ser. No. 69,217
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—434 **12 Claims**



1. Method of making a print head assembly, comprising the steps of: providing mounting meanss having a concave mounting surface, providing supporting means disposed opposite the concave mounting surface, providing a series of drive wheels having holes, providing a series of printing bands each having a plurality of different printing elements, providing a selector, providing a pair of first and second side plates with the second side plate having an opening, placing the mounting means and supporting means in a fixture, assembling the drive wheels and the respective printing bands onto the mounting means so that the drive wheels are rotatably supported on the concave mounting surface with their holes in general alignment and with the printing bands being trained about the respective drive wheels and the supporting means to provide a subassembly, removing the subassembly from the fixture, and connecting the first and second side plates to opposite sides of the subassembly in precise orientation with the selector extending through the opening in the second side plate and into the holes to engage any selected wheel to provide an assembly.

4,283,833

METHOD OF ATTACHING A BALL JOINT TO A SUSPENSION MEMBER

Eliot T. Pyles, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 16, 1979, Ser. No. 21,038
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—441 R **5 Claims**

1. A method of attaching a ball joint assembly to a suspension member for connecting a wheel assembly to a vehicle frame, the ball joint assembly including a socket for receiving a bearing and a stud, said method comprising the steps of:

providing an opening on said suspension member;

inserting said socket into said opening;

welding said socket to said suspension member to fixedly position said socket within said opening;

machining said socket after said socket is welded to said suspension member to provide a cavity within said socket

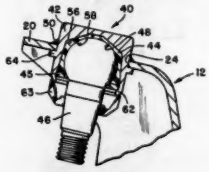
to receive said bearing and to further provide a contoured surface on said cavity engageable with said bearing; and

mounting said bearing and said stud within said cavity of said socket after the latter is welded to said suspension member and machined to provide said contoured surface.

4. The method of attaching a ball joint assembly to a suspension member for connecting a wheel assembly to a vehicle frame wherein the ball joint assembly includes a socket providing a cavity therein, a bearing received within said cavity, and a stud coupled to the bearing, said method comprising the steps of:

providing an opening on said suspension member;

inserting said socket into said opening to abut a first portion of said socket with said suspension member and to extend a second portion of said socket outwardly from said opening;



welding said second portion of said socket to said suspension member to permanently fix said socket to said suspension member;

engaging a tool with said socket to generate a contoured surface within said cavity on said socket after said socket is welded to said suspension member, said contoured surface having a predetermined shape which substantially matches the outer surface of said bearing;

inserting said bearing and said stud which is coupled thereto into said cavity to engage said bearing outer surface with said contoured surface; and

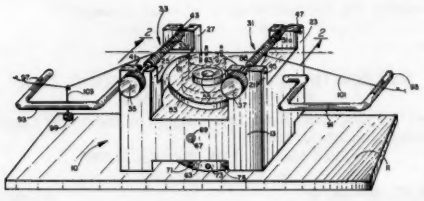
deforming said socket to prevent separation between said bearing and said socket, thereby forming said ball joint assembly on said suspension member.

4,283,834

APPARATUS AND METHOD FOR ALIGNING FINE WIRE FOR THERMAL BONDING

Richard F. Nicholas, Whittier, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 19, 1979, Ser. No. 21,404
Int. Cl.³ B23K *37/04*; H01R *43/02*
U.S. Cl. 29—468 **6 Claims**



1. An alignment fixture for relatively positioning a fine wire and a workpiece comprising, in combination:

a base;

a housing supported by the base;

a pair of spaced apart lead screws independently rotatably supported by the housing;

a first spacer arm extending outwardly of the housing in a direction away from one of said screws;

a second spacer arm extending outwardly of the housing in a direction away from the other of said screws; and,

means for supporting the workpiece between said spacer arms;

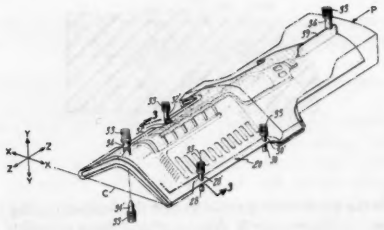
said wire extending from one of the spacer arms to the other of the spacer arms via the threads of said screws whereby rotation of one or both of the screws translates the wire relative to the workpiece.

4,283,835

CAMBERED CORE POSITIONING FOR INJECTION MOLDING

Frank T. Obrochta, East Hartford, Conn., and Ralph E. Disa, Hampden, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1980, Ser. No. 136,600
Int. Cl.³ B22C *7/02*
U.S. Cl. 29—527.6 **7 Claims**



1. Apparatus for improving the precision of location of a core in an injection molding die usable for forming a thin walled cambered airfoil shape surrounding a cambered core having a longitudinal z axis and x and y axes perpendicular thereto, where the x axis lies generally along a chord of the core, the die having similar axes corresponding to the core and having two opposing sides generally facing the x-z plane, comprising:

a first set of at least three fixed peripheral locators positioned in a first side of the die at a core surface datum, the set having at least two locators spaced apart on one side of the z axis and at least one locator on the opposing side;

at least two resiliently movable centerline locators positioned in the second side of the die and spaced apart generally along the z axis, adapted to engage a core, said centerline locators being movable generally parallel to the y axis;

means for urging a core against the locators on the first side.

4. The method of producing a precision cambered hollow article, such as a gas turbine blade, using a cambered ceramic core and an injection molding die to produce a lost wax pattern, which comprises:

mounting the concave side of the core in the die on at least three fixed locators;

urging the core against the fixed locators by applying force to the convex side;

forming a pattern about the core within the die, forming a mold from the pattern and core, and forming an article from the mold, to bias deviations caused by the core into the convex side wall of the article; and

altering the dimension of the external convex surface of the article, to thereby compensate for deviations in the core and produce an accurate finished part.

5. In the casting of cambered gas turbine components using an expandable pattern, such as in the lost wax method, the process of improving the location in a thermoplastic injection die of a core having a longitudinal z axis and x and y axes perpendicular thereto, where the x axis lies generally along a chord of the core, comprising:

contacting a first side of the core at its periphery by means of

fixed locators, to accurately position the core along the y axis;

contacting a second side of the core along its centerline by means of resilient movable locators, to accurately position the core along the x and z axes without interfering with the functioning of the fixed locators; and

resiliently urging the core by said resilient movable locators in the direction of the fixed locators, to maintain the position of the core during injection of thermoplastic into the die.

4,283,836

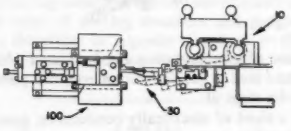
MULTI-MODULE DIP TRANSFER AND INSERTION MACHINE

Stanley Janisiewicz, Endwell, and Robert H. Holmes, Binghamton, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sep. 25, 1979, Ser. No. 78,682

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—564.1 **27 Claims**



1. An apparatus for inserting electronic components, said components having a body and dual in-line parallel leads extending therefrom, said apparatus comprising:

a magazine for supplying said components one at a time at a first station;

an insert head means for receiving an individual component at a second station, rotating to an insert position, and inserting said component into a printed circuit board; and

a shuttle means for engaging said magazine, and releasing and removing an individual component from said magazine assembly at said first station, transporting said component to said second station, loading said insert head means with said component, and returning to said magazine assembly.

4,283,837

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Arie Slob, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

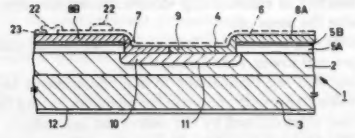
Division of Ser. No. 837,032, Sep. 27, 1977, Pat. No. 4,161,745.

This application Apr. 12, 1979, Ser. No. 29,424

Claims priority, application Netherlands, Nov. 19, 1976, 7612883

Int. Cl.³ H01L *21/365, 21/42, 21/44*

U.S. Cl. 29—578 **8 Claims**



1. A method of manufacturing a semiconductor device having a semiconductor body of monocrystalline silicon, which comprises:

providing an electrically insulating layer on the surface of said silicon semiconductor body;

providing a window in said insulating layer to expose a portion of the silicon body surface;

forming a surface zone of a first type conductivity at least partly adjacent the surface-adjoining portion of the silicon body exposed by said window;

depositing a silicon layer from the gaseous phase on the insulating layer and on the exposed silicon surface within said window;

doping at least a part of the silicon layer within said window in a first doping step to obtain a first silicon lower part of the first type conductivity, the first silicon layer part within the window contacting said surface zone of the first type conductivity;

masking a part of the silicon layer extending within a part of the window and on the insulating layer outside the window; and

converting a further nonmasked part of the silicon layer situated partly within the window and partly on the insulating layer outside the window to a second type conductivity opposite to that of the first type in a second doping step to obtain a second silicon layer part of the second type conductivity, said second silicon layer part being formed adjoining the first silicon layer part at least within said window.

4,283,838

METHOD OF MAKING PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICES

Masahiro Yamane; Toshimi Watanabe; Keiji Itoga; Kiyoshi Ishibashi; Yutaka Morita; Isamu Yamamoto, and Kiyoji Imanaka, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 780,437, Mar. 23, 1977, abandoned.

This application Feb. 12, 1979, Ser. No. 11,639

Claims priority, application Japan, Mar. 31, 1976, 51-35314; Mar. 31, 1976, 51-38987[U]; Apr. 7, 1976, 51-43356[U]

Int. Cl.³ H01L *21/28*

U.S. Cl. 29—588 **5 Claims**

1. A method of preparing plastic encapsulated semiconductor devices which comprises the steps of:

preparing a connected metal plate in which a plurality of semiconductor element holding parts are connected in series in one direction with at least two connecting arms, disposed between each pair of semiconductor holding parts, said connecting arms each having an area smaller than that of said semiconductor element holding parts;

forming all of said connecting arms inside the side surfaces of said semiconductor element holding parts in the connecting direction for substantially preventing the formation of dulls caused by punching a metal plate;

providing semiconductor elements having a pair of main surfaces in parallel with each other and a pn junction in said semiconductor elements, the exposed pn junction being coated with one of a glass passivation and a nitride passivation;

bonding the semiconductor elements on one main surface of said semiconductor element holding parts;

providing a lead frame having a plurality of spaced parallel ribbon lead electrodes extending from a common connecting part;

bonding the free ends of the ribbon lead electrodes on the other of the main surfaces of said semiconductor elements;

plastic encapsulating said semiconductor elements, said semiconductor element holding parts and said ribbon lead

electrodes except said connecting arms, the other main surface of said semiconductor element holding parts and the connecting part of said ribbon lead electrodes;

separating said semiconductor devices by cutting said connecting arms of said connected metal plate and the connecting part of said ribbon lead electrodes; and

supporting the connecting arms along the entire width of the connecting arms against the action of cutting of the connecting arms so as to prevent deformation of the semiconductor element holding parts.

4,283,839

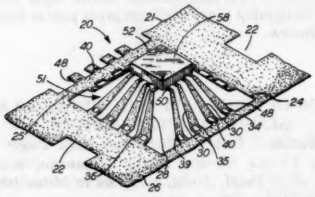
METHOD OF BONDING SEMICONDUCTOR DEVICES TO CARRIER TAPES

Michael T. Gursky, Allentown, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 928,134, Jul. 26, 1978, Pat. No. 4,234,666. This application Jul. 7, 1980, Ser. No. 166,440

Int. Cl.³ H01L *21/50*

U.S. Cl. 29—589 **9 Claims**



1. A method of affixing a chip to a tape having leads with free ends extending therefrom while forming a desired shape in the leads comprising:

bonding the free ends of the leads to the chip;

stressing the leads to form the free ends of the leads into a spaced relationship with the plane of the tape; and

relieving the forming stresses in the leads uniformly by concentrating the stresses to plastically deform the leads at a stress relief site in each of the leads located symmetrically about the longitudinal center of each lead.

4,283,840

METHOD FOR MANUFACTURING A SUPPORT CONSTRUCTION FOR THE WINDING IN AN ELECTRICAL MACHINE

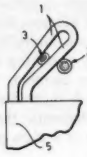
Erkki Merikallio, Espoo, and Paavo Paloniemi, Helsinki, both of Finland, assignors to Oy Stromberg AB, Helsinki, Finland

Filed Jun. 12, 1979, Ser. No. 47,694

Claims priority, application Finland, Jun. 13, 1978, 781878

Int. Cl.³ H02K *15/12*

U.S. Cl. 29—596 **9 Claims**



1. A method for the manufacture of a support structure for the coil ends in an electrical machine comprising arranging in the winding at least one hollow supporting body having a porous wall and filled with substantially particulate filler agent and thereafter impregnating the body with a liquid hardenable impregnation agent and hardening the impregnation agent, at least part of the particles and particle size distribution in the filler agent being of a magnitude suitable for blocking pores in the porous wall and thereby reducing the flow-off of the impregnation agent from the filler agent after the impregnation.

4,283,841

METHOD OF MANUFACTURING A COMMUTATOR

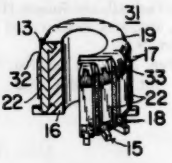
Akira Kamiyama, Kiryu, Japan, assignor to Mitsuba Electric Mfg. Co., Ltd., Kiryu, Japan

Filed Dec. 13, 1978, Ser. No. 969,277

Claims priority, application Japan, Jan. 26, 1978, 53-6680; Jul. 20, 1978, 53-100447[U]

Int. Cl.³ H01R *43/08*

U.S. Cl. 29—597 **7 Claims**



1. A method of manufacturing a commutator which may be submerged and used in gasoline for an extended period of time, comprising the steps of:

(a) fixing a sheet of electrically conductive, gasoline-resistant material to a copper plate;

(b) blanking said copper plate into a shape to provide claw-forming projections and riser-forming projections;

(c) rolling said copper plate and affixed sheet to form a cylinder;

(d) bending said claw-forming projections inwardly of said cylinder and said riser-forming projections outwardly of said cylinder;

(e) forming a hub of resin within said cylinder with said claw-forming projections at least partially embedded in said hub;

(f) slitting said cylinder and affixed sheet longitudinally at regular intervals to form a plurality of commutator segments having exposed copper portions and sheet covered portions; and

(g) forming a cover layer of gasoline-resistant material on said exposed copper portions of said commutator segments.

4,283,842

METHOD OF MAKING AN ELECTRICAL INDUCTIVE APPARATUS

Angelo A. DeLaurentis, Sharpsville; Frank G. Zola, Jr., and Theodore R. Specht, both of Sharon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 933, Jan. 4, 1979, Pat. No. 4,200,854. This application Aug. 3, 1979, Ser. No. 63,876

Int. Cl.³ H01F *41/02*

U.S. Cl. 29—606 **6 Claims**

1. A method of constructing electrical inductive apparatus, comprising the steps of:

providing leg laminations having first and second ends, and upper and lower yoke laminations,

stacking said leg laminations to a predetermined build dimension to provide complete leg members having first and second sides defined by the outermost laminations,

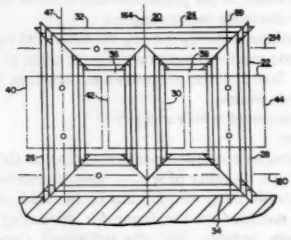
orienting said leg members in spaced parallel relation with their first and second sides in substantially horizontally oriented planes,

assembling said lower yoke laminations with the first ends of the leg laminations, starting at one side of the leg members and progressing to the other side, to provide a sub-assembly having leg members and a lower yoke member,

uprighting said sub-assembly such that the second ends of the leg laminations are higher than their first ends,

providing an electrical winding assembly for at least one of said leg members,

telescoping said electrical winding assembly over said at least one leg member,



and assembling said upper yoke laminations with the second ends of the leg members, starting intermediate the first and second sides of the leg members and progressing outwardly therefrom in opposite directions to the first and second sides of the leg members, to define an upper yoke member.

4,283,843

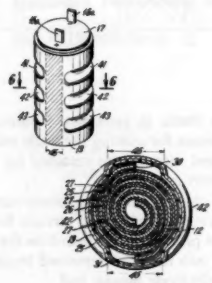
METHOD OF MAKING VIBRATION RESISTANT ELECTROCHEMICAL CELL HAVING DEFORMED CASING

John W. Hooke, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Division of Ser. No. 25,060, Mar. 29, 1979. This application Nov. 2, 1979, Ser. No. 90,597

Int. Cl.³ H01M *6/10*

U.S. Cl. 29—623.1 **8 Claims**



1. In a method of manufacturing electrochemical cells of the type having an electrode assembly including spirally wound plate electrodes of which at least one electrode has an end terminating among the outer convolutions of the electrode assembly, the improvement comprising:

providing a generally tubular cell case of permanently deformable material;

inserting the electrode assembly into said cell case;

aligning the electrode assembly within the case so that the terminal end of said one electrode is in a predetermined angular position relative to a reference point exterior of the cell case; and

inwardly deforming said case at locations angularly displaced from said angular position of the terminal end of said one electrode, the deformed casing engaging the electrode assembly with sufficient force to restrain it against movement within the case such that deformations formed on said casing at said locations do not contact said terminal end of said one electrode.

4,283,844

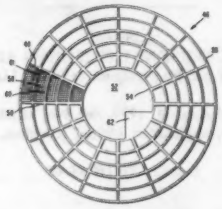
METHOD OF MAKING BATTERY ELECTRODE STRUCTURE

Martin J. Milden, Los Angeles, and Stanley Gordon, Torrance, both of Calif., assignors to Hughes Aircraft Company, Calif.

Filed Aug. 16, 1979, Ser. No. 66,989

Int. Cl.³ H01M *4/04*

U.S. Cl. 29—623.5 **6 Claims**



1. The method of making a self-supporting electrode substrate for a nickel-hydrogen cell comprising the steps of:

coating nickel sheet metal with a photoresist;

exposing the photoresist in accordance with a desired electrode pattern to leave a solid outer rim around the electrode substrate, to leave a solid inner rim within said electrode substrate with an inner opening interiorly of the inner rim toward the center of the electrode substrate and with a tab positioned on the inner rim, together with radially directed conductors attached to the inner rim and to the outer rim and being of greater cross-section closer to the inner rim than to the outer rim to reduce electrical resistance drop as current moves through the radial conductors with respect to the inner rim;

chemically etching away through the nickel to form a nickel substrate having perforations therethrough in accordance with the photoresist pattern to provide ion flow paths perpendicular to the conductors.

4,283,845

APPARATUS FOR POSITIONING ELECTRICAL COMPONENTS RELATIVE TO A CARRIER

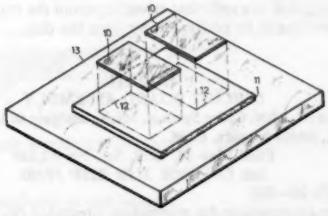
Pierre L. Sigel, Villeneuve-le-Roi; Raymond L. Delorme, Bagnolet, and Henri Grosjean, Le Plessis Trevise, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Jun. 20, 1978, Ser. No. 917,279

Claims priority, application France, Jul. 4, 1977, 77 20466

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—739 **6 Claims**



5. Apparatus for positioning articles relative to a carrier so that articles can be laid down on the carrier and attached at predetermined locations on the carrier comprises a first refer-

ence system defined by at least three rotatable elements against which the lateral edges of the carrier come to bear, first means for bringing the carrier to a predetermined position in relation to said first reference system, a second reference system defined by at least three rotatable elements, second means for defining on the carrier, when it is in said predetermined position, the locations for the articles to be laid down, third means to bring the articles to be laid down to a predetermined position in relation to said second reference system, and said second reference system being disposed with respect to said first reference system so as to enable the carrier to be positioned in relation to the said articles in such a way that the articles are then exactly opposite the predetermined locations for them on the carrier.

4,283,846

ELECTRICAL TERMINAL CRIMPING APPARATUS

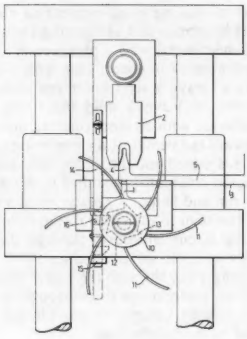
John C. Collier, York, Pa., assignor to BICC Limited, London, England

Filed Aug. 31, 1979, Ser. No. 71,538

Claims priority, application United Kingdom, Sep. 4, 1978, 35512/78

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—753 **10 Claims**



1. For use in crimping an electrical terminal to a stripped end of an electrical lead, electrical crimping apparatus comprising at least two crimping dies so mounted that at least one of the dies is contrained to move towards and away from the other die, wherein a wheel having a number of circumferentially spaced, outwardly extending vanes is rotatably mounted with respect to the crimping dies and wheel-engaging means for effecting at least partial rotation of the wheel is operatively connected to the movable die, the arrangement being such that, after an electrical terminal has been crimped to a stripped end of an electrical lead and as said movable die travels away from the other die, said wheel-engaging means automatically causes the wheel to rotate to such an extent that one of the vanes will push the terminated lead laterally from between the crimping dies to a sufficient extent to permit the stripped end of another lead to be positioned between the dies.

4,283,847

CIRCUIT BOARD ASSEMBLY

Gordon M. May, Cedar Springs, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed May 24, 1979, Ser. No. 42,139

Int. Cl.³ H05K *3/30*; B23P *19/00*

U.S. Cl. 29—832 **38 Claims**

1. In an apparatus for assembling integrated circuits having a body and a plurality of leads extending therefrom onto a printed circuit board comprising a plurality of solder-containing pads designed to receive the integrated circuit leads, wherein the leads of the integrated circuits are tinned and bent downwardly and laterally to form feet to contact the printed circuit pads;

a table for mounting a printed circuit board;

electrode means for soldering the integrated circuit leads to the printed circuit board at a predetermined location on the table;

means for positioning the integrated circuits on the printed circuit board at the predetermined location for soldering by the electrode means; and

means for intermittently moving the table with respect to the electrode means to position different areas of the printed circuit board at the predetermined location beneath the electrode means;

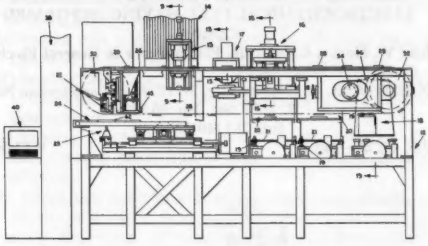
the improvement which comprises:

a frame;

a continuous conveyor means mounted on the frame and having a plurality of spaced support means to support and retain integrated circuits by the leads thereof;

means mounted on the frame for dispensing integrated circuits seriatim onto the integrated circuit support means so that the integrated circuits are supported thereon by the leads;

means on the frame operably associated with the conveyor means for bending the leads downwardly and outwardly to form feet on the leads for contact with the printed circuit board while the leads are supported by the conveyor means integrated circuit support means;



means on the frame in proximate relationship with the conveyor means for coating the leads with solder while the integrated circuits are retained by the integrated circuit support means;

the integrated circuit positioning means comprising means for transferring the integrated circuits from the support means to the printed circuit board on the printed circuit board table into the predetermined location for soldering by the electrode means; and

means for intermittently moving the conveyor means so that the integrated circuit support means move sequentially from the dispensing means to the lead-forming means, the solder coating means and the transferring means.

33. A method of assembling flat pack integrated circuits having a body and a plurality of outwardly extending leads onto circuit boards comprising a plurality of solder-containing pads, the method comprising the steps of:

dispensing flat packs seriatim;

gripping the flat packs as they are dispensed by the leads thereof and while the flat packs are gripped by the leads:

bending the leads downwardly and outwardly of the body to form feet for mounting the integrated circuits on the circuit board; and

applying solder to said feet; and

thereafter soldering the leads to pads on the circuit board.

4,283,848

DRYSHAVER

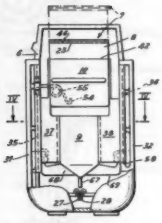
Werner Messinger, Kronberg; Roland Ullmann, Hausen, and Otto Schweingruber, Glashütten, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankurt am Main, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,784

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843947

Int. Cl.³ B26B *19/00*

U.S. Cl. 30—34.1 **12 Claims**



1. In a dryshaver, a combination comprising a drive; a long-hair trimmer; a first slide mounting said trimmer and being movable to and from in operating position in which said trimmer is operatively coupled with said drive to be powered by the same; and switch means, including a second slide provided at and movable relative to said first slide, for energizing and de-energizing said drive.

4,283,849

CUTTING UNIT FOR A DRY-SHAVING APPARATUS

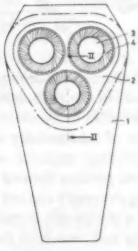
Manfred Engelhardt; Jan Reinink; Jochem J. de Vries, and Eduard W. Tietjens, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,277

Claims priority, application Netherlands, Sep. 21, 1978, 7809604

Int. Cl.³ B26B *19/14*

U.S. Cl. 30—43.6 **3 Claims**



1. A shaving apparatus having a shear plate provided with hair-entrance apertures and a cutting unit associated with and drivable relative to the shear plate; said cutting unit comprising a cutting member, cutters extending from said cutting member toward the shear plate, each cutter having a front wall sloping rearwardly with reference to the direction of movement of the cutting unit, and lead cutters, respectively associated with and movable relative to the cutters, each lead cutter engaging the front wall of its associated cutter along a contact line, each lead cutter being bent in substantially the shape of an L with the open portion of the L facing in the direction of movement of the cutting unit, said L-shaped lead cutter being pivotal in the area of its bend relative to the cutter about said contact line.

4,283,850

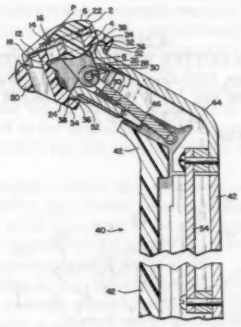
RAZOR BLADE ASSEMBLY WITH A REMOVABLE BLADE CARTRIDGE

Paul W. Douglass, Winchester, and Robert A. Trotta, Winthrop, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 13, 1979, Ser. No. 93,677

Int. Cl.³ B26B *21/06, 21/22*

U.S. Cl. 30—47 **3 Claims**



1. A razor blade assembly comprising a body portion having blade means permanently fixed therein, a first connecting means disposed on said body portion and adapted to engage a razor handle to form a pivotal connection therebetween, and a second connecting means disposed on said body portion and adapted to fixedly interconnect with mounting means on said razor handle, said first connecting means being disposed on a first portion of said body portion and said second connecting means being disposed on a second portion of said body portion, said first and second body portions being pivotally joined to each other, said first connecting means comprising a projection extending from an undersurface of said first portion of said body portion, and said second connecting means comprising rails defining opposed grooves, said projection extending between said rails and beyond a plane defined by said blade assembly rails.

4,283,851

SCISSOR-TYPE SHEAR, ESPECIALLY A CABLE CUTTER

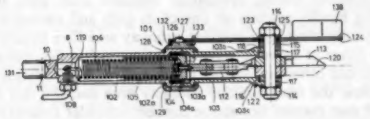
Eckhard Wolter, Dürmentigen, Fed. Rep. of Germany, assignor to Baudat E. Wolter KG, Dürmentingen, Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 97,970

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910544

Int. Cl.³ B26B *15/00*

U.S. Cl. 30—134 **20 Claims**



1. A shear-type cutting tool, especially a cable cutter, comprising:

a housing;

an actuator shiftable in said housing;

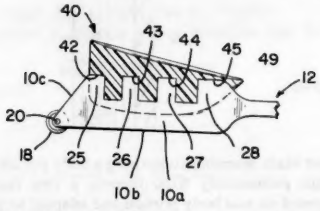
a pair of blades connected to said housing and defining a pivot axis for at least one of said blades with said blades lying against one another and having cutting edges performing a shearing action upon angular displacement of

said one of said blades about said axis whereupon motion of at least one cutting edge defines a cutting plane substantially transverse to said pivot axis;

means operatively connecting said actuator to said one of said blades for displacing same; and

a mechanism responsive to the operation of said actuator for applying a pressing force to said blades generally in the direction of said axis and dimensioned in accordance with cutting resistance encountered by said blades while relieving said pressing force upon opening of said blades.

4,283,852
GLASS CUTTER WITH ATTACHMENT
Orville D. Hooper, 3130 Sapp Rd., Tumwater, Wash. 98502
Filed Aug. 13, 1979, Ser. No. 65,976
Int. Cl.³ C03B *33/12*
U.S. Cl. 30—164.95 **7 Claims**



1. A glass cutter comprising:

a body having an elongated head at the front, a central grip section and a stem at the rear, said head having a rectangular notch at the top for receiving the edge of a glass pane;

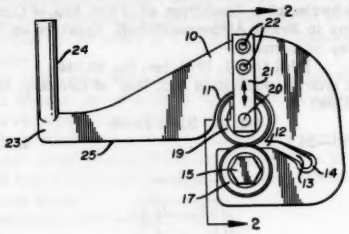
a glass scoring wheel mounted at the front end of the elongated head to extend below and to the front of such head;

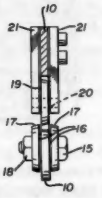
said central grip section being shaped to be gripped in a hand between the thumb at the bottom side and index finger at the top side with the stem between the index and middle fingers when the glass cutter is to be operated by pulling it in the rearward direction; and

a detachable attachment formed with a bottom channel fitting over said head and having a raised portion in said channel fitting into said notch, said attachment being formed with an upwardly facing thumb grip arranged to have a thumb bear thereagainst with the adjoining index finger resting against the underside of said central grip section when the glass cutter is to be operated by pushing it in the forward direction.

4,283,853
CUTTING TOOL
Daniel B. Fazzini, 1877 Mathews Rd., Youngstown, Ohio 44514
Filed Mar. 24, 1980, Ser. No. 132,910
Int. Cl.³ B26B *13/00*
U.S. Cl. 30—265 **4 Claims**

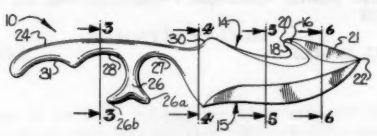
1. A cutting tool comprising an elongated vertically standing body member having oppositely disposed ends with an upstanding handle portion on one of its ends and having an upwardly extending semi-circular cutaway area therein inwardly of the other of its ends communicating with a slot extending toward said other end so that a first part of said body member lies below the semi-circular cutaway area and the slot and a second part thereof lies above the semi-circular cutaway area and the slot, a pair of spaced circular cutting blades, means for mounting said pair of circular cutting blades on said first part with one blade on either side of said first part with their upper peripheral edges in said semi-circular cutaway area, a single circular cutting blade, secondary means on said second part mounting said single circular cutting blade in said semi-circular cutaway area with the lower peripheral edges of said single circular cutting blade engaging the uppermost peripheral edges of said pair of circular cutting blades whereby movement of said cutting tool along the upper surface of a work piece to be cut causes said circular cutting blades to form a





double cut line in said work piece by separating a narrow strip therefrom.

4,283,854
HUNTER'S KNIFE
Marvin L. Austin, Rte. 1, Box 117, Mount Pleasant, N.C. 28124
Filed Apr. 22, 1980, Ser. No. 142,730
Int. Cl.³ B26B *3/00*
U.S. Cl. 30—314 **12 Claims**



1. A knife particularly adapted for use by hunters in eviscerating and skinning animals in the field, and comprising

an elongate integral metallic body defining a blade portion and a handle portion of substantially equal lengths,

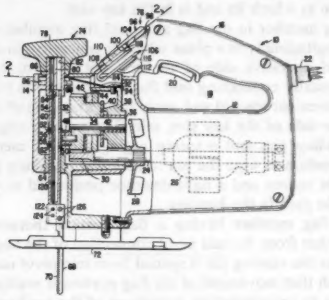
said blade portion including opposite sides, with one side having a hook-shaped portion formed therein, said hook-shaped portion being reversely curved toward said handle portion and having a sharpened arcuate inner edge and a relatively blunt outer end, and with the other side of said blade portion having a continuous cutting edge formed along substantially the full length thereof, and

said handle portion including finger engaging means for securing the knife to the user's hand when the palm thereof is closed about the handle portion and the knife is used for cutting, as well as when the palm is open and the hand is used for manipulation of the animal carcass or the like, said finger engaging means being defined at least partially by a pair of open sided adjacent arcuate recesses having generally oppositely and outwardly directed openings, each respective recess defining an upper overhanging portion with said upper overhanging portions being generally oppositely and outwardly directed so as to overlie the corresponding finger received therein.

4,283,855
SABRE SAW WITH ROTATABLE SAW BAR

David J. Nalley, Liberty, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 137,928
Int. Cl.[3] B27B *11/00, 19/09*
U.S. Cl. 30—394 3 Claims

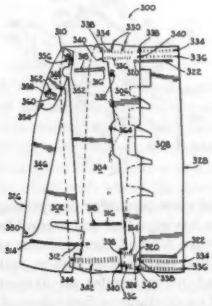


1. In a sabre saw having a generally tubular saw bar journalled for linear movement in a sleeve bearing secured in the bottom portion of the saw housing and a journal bushing secured in the top portion of the housing and rotatable therein and means provided between the top of the saw bar and the journal bushing so that they rotate together, a generally annular collar surrounding said journal bushing provided with a plurality of generally radial notches, a cantilevered leaf spring mounted to the housing with its distal end adjacent said collar and shaped for selective engagement within the notches, a slide trigger slidably carried by the housing at a top portion thereof convenient to an operator's thumb control which when slid towards the saw bar, depresses said cantilevered leaf spring against the collar and into a selective one of the notches when they are aligned for locking the saw bar against rotation.

4,283,856
GARMENT DESIGNING AID

Fred W. K. R. Werber, 29 Schaumans-kamp, Reinbeck, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 853,668, Nov. 21, 1977, Pat. No. 4,156,969.
This application Mar. 1, 1979, Ser. No. 16,668
Claims priority, application United Kingdom, Nov. 19, 1976, 48456/76; South Africa, Mar. 9, 1977, 77/1434
Int. Cl.[3] A41H *3/015*
U.S. Cl. 33—14 4 Claims



1. A skirt design aid for assisting a person in providing a pattern for a skirt, the design aid including four template sections that are interconnected and are relatively displaceable as follows:

a first substantially triangular template section, whose apex is located at the waist side of the pattern and which extends the length of the pattern so that its base is located at the hem line of the pattern;

a second substantially rectangular template section, an upper portion of which defines part of the waist of the pattern, and which extends to the hem line of the pattern, the first template section being pivotally secured at its apex to an upper corner portion of the second template section, and with the degree of pivotal overlap of the first and second template sections being adjustable;

a third template section that is also substantially rectangular, which also extends from the waist line to the hem line and is secured to the second template section on the opposite side thereof to the first template section in a linear sliding manner;

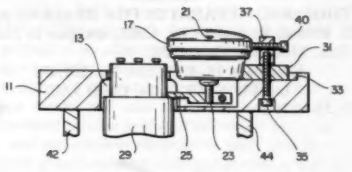
a fourth template section that is also substantially rectangular and which also extends from the waist line to the hem line and which is secured to the third template section on the opposite side thereof to the second template section in a linear sliding manner; and

a hip dimension varying means which comprises a first member pivotally attached at one end to the first template section and a second member pivotally attached at one end to the first member intermediate the first member's ends, with the free ends of the first and second members being secured to the first template section by means of a screw and nut, the screw passing through suitable slots in the first and second members.

4,283,857
SPINDLE-HEIGHT GAGE AND METHOD OF CALIBRATION

Erwin W. Graham, Saratoga, Calif. and Wayne B. Graham, San Jose, Calif. assignors to Tentel Corp. Cambell, Calif.

Filed Aug. 17, 1979, Ser. No. 67,547
Int. Cl.[3] G01B *3/28, 5/18*
U.S. Cl. 33—169 R 11 Claims



1. A gage for measuring the height of a spindle in a cassette tape recorder, comprising:

a base configured for insertion into said tape recorder, said base having a spindle opening therein into which said spindle protrudes when said gage is inserted into said tape recorder;

a dial indicator having a bottom section rigidly mounted to said base, a top section which is free to rotate about a central axis, and a pointer;

a shaft extending from said indicator into said spindle opening in said base, the angular displacement of said pointer of said indicator being responsive to motion of said shaft;

a foot extending into said spindle opening so that said spindle will come into contact with and cause linear displacement of said foot, said foot acting upon said shaft, causing angular displacement of said pointer to indicate the height of said spindle; and

a stop screw mounted to the base adjacent to the dial indicator to permit rotation of said top section during calibration

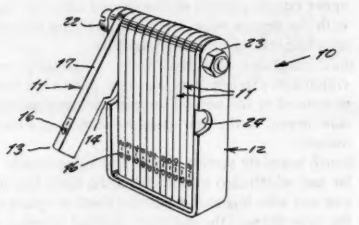
of said gage, but to prevent rotation of said top section at other times.

4,283,858

45 DEGREE CHAMFER AND RADIUS GAUGE SET

Marian Sobczak, 75 Pinedale Rd., Hauppauge, N.Y. 11787

Filed Nov. 8, 1979, Ser. No. 92,350
Int. Cl.[3] G01B 3/14
U.S. Cl. 33—174 R 3 Claims



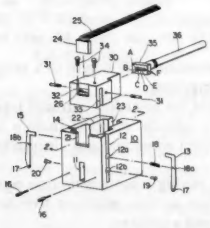
1. A 45 degree chamfer and radius gauge set, comprising in combination, a plurality of flat templates; and a U-shaped frame having fastener means across one of the ends thereof for fastening said templates thereto, said plurality of templates being pivotally mounted by said fastening means; each of said templates comprising a flat structure of rectangular cross-section with a first longitudinal side surface, a second longitudinal side surface, a first rounded transverse end surface at one end of the longtitudinal surfaces, and a second transverse end surface at the other end of said longitudinal side surfaces; said second longitudinal side surface having a first surface portion and a second surface portion offset from said first surface portion by a 45 degree angle offset, and that portion adjoining both said first longitudinal side surface and said second transverse end surface being rounded to a specific dimension to define a radious gauge, whereby said offset surface may measure a chamfered surface of a work piece and said rounded portion may measure a rounded surface of a work piece.

4,283,859

METHOD AND APPARATUS FOR READING A KEY

Max G. Roland, Redwood City, Calif., assignor to Maromatic Co., Inc., Mountain View, Calif.

Filed May 19, 1980, Ser. No. 151,458
Int. Cl.[3] G01B 11/24; G01D 5/32
U.S. Cl. 33—174 F 9 Claims



1. An apparatus for reading indentations in a key, comprising:

a housing having a key opening, a rectangular key slot extending from said key opening longitudinally into the housing for receiving a key which essentially mates with the cross-section of the key slot, said key slot cross-section having at least one generally flat operative side which faces a side of the key which is generally flat and has indentations therein,

at least one flag slot extending in a plane perpendicular to the said operative side of the key slot and intersecting that side,

a reading pin in the flag slot, said reading pin being movable therein in a direction perpendicular to the said operative side of the key slot and intersecting said side, such that the pin enters the key slot across the said operative side at a point to sense conditions on the facing side of a key inserted into the key slot, limiting means to limit inward movement of the reading pin to an inward limiting position at which its end is in the key slot,

a flag member in the flag slot, said flag member extending longitudinally in a plane which is generally parallel to the said operative side of the key slot, a pivot connection pivotally connecting said flag member in the housing for movement toward and away from the plane of the operative side of the key slot, said flag member engaging the reading pin, and a spring urging the flag member in a direction to urge the pin to its inward limiting position,

a light source and a light detector positioned to provide a light path in the housing,

said flag member having a flag portion thereon located farther from the said pivot connection of the flag member than the reading pin is spaced from said pivot connection, such that movement of the flag portion is multiplied relative to corresponding movement of the reading pin, said flag portion being pivotally movable between at least an inward position corresponding to its pin sensing a certain depth of indentation on the said generally flat side of the key, and an outward position pivoted away from the inward position by the reading pin contacting a portion of the key at which the depth of the indentation is less than said certain depth,

the flag portion being positioned to move across the said light path such that in one of said inward or outward positions it blocks the light path, and in the other position it unblocks the light path,

and a clock line means for distinguishing each reading of the key by the pin from readings at successive positions along the key, as the key is moved into the key slot, past the reading pin,

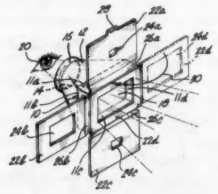
whereby a plurality of different reading positions along the said generally flat side of a key can be read rapidly as the key is inserted and moved into the key slot.

4,283,860

LENS FIELD OF VIEW SIMULATOR

John Rucker, Olympia, Wash., assignor to R. Ideas, Inc., Bainbridge Island, Wash.

Filed Sep. 10, 1979, Ser. No. 73,746
Int. Cl.[3] G01B 11/00; G03B 11/04, 13/02
U.S. Cl. 33—277 7 Claims



1. A lens field of view simulator comprising:

a central portion having a first and second face and having a viewing aperture formed therein from said first face to said second face, said central portion including four first walls arranged in rectangular orientation, said first face being defined by contiguous first edges of said first walls;

a plurality of plates, each plate having a lens field of view simulation aperture formed therethrough, the respective lens simulation aperture on each plate being of a different

size and simulating the field of view provided by a lens of predetermined focal length;

means for mounting said plates on said first face of said central portion for selective placement of said plates into register with said viewing aperture, each of said plates being associated with one of said first walls, said mounting means including a plurality of hinges attaching each of said plates to its associated first wall, said central portion, plates and hinges being integrally formed as a single unit.

4,283,861

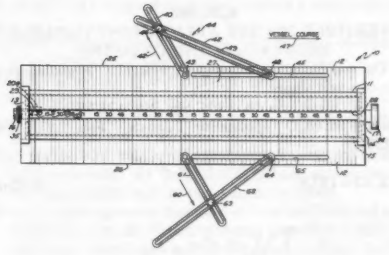
PLOTTING DEVICE

William W. Timmis, 85 Gibson Rd., Bristol, R.I. 02809

Filed Nov. 16, 1979, Ser. No. 94,884

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—449 **7 Claims**



1. A plotting device comprising an elongated body with a straight edge and an arcuate portion extending lengthwise thereof, a window in said arcuate portion extending lengthwise of said arcuate portion, graduations of distance extending away from said straight edge to said window and comparable with the distance on the chart with which the device is intended to be used, a roll mounted in said arcuate portion with its axis parallel to said straight edge, said roll extending below said body to enable said body to be rolled at right angles to said straight edge along a generally flat surface, said roll having a line of time indicia lengthwise thereof along its surface to cooperate with said distance graduations and a speed marking for indicating the line of time indicia exposable through said window.

4,283,862

ELECTROSTATIC METHOD AND APPARATUS FOR TREATING MATERIAL

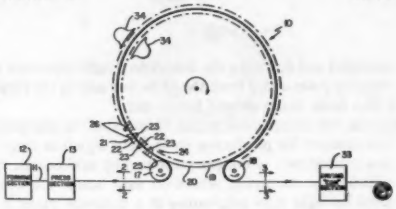
James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Division of Ser. No. 50,807, Jun. 21, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, said Ser. No. 263,605, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned. This application Feb. 25, 1980, Ser. No. 124,224

The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.

Int. Cl.³ F26B *3/34*; B01D *57/02*; C25B *7/00*

U.S. Cl. 34—1 **27 Claims**



1. In a method for drying material by disposing said material against a heated surface means, the improvement comprising the steps of disposing charged electrode means adjacent said surface means to cooperate therewith to define a plurality of alternately arranged non-uniform electrostatic fields extending between said electrode means and said surface means with each non-uniform field having the higher intensity portion thereof substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field so that said fields at least partially extend through said material while said material is disposed against said surface means and between said surface means and said electrode means, *and causing relative movement between said electrode means and said material so that said non-uniform electrostatic fields serially act on at least a portion of said material while said portion of said material is being heated by said heated surface means.*

4,283,863

RANGE FINDER FOR FOCUSABLE PHOTOGRAPHIC OR CINEMATOGRAPHIC CAMERA

Wilfred Heiniger; Claude Kreienbühl, and Manuel Millan, all of Yverdon, Switzerland, assignors to Bolex International SA, Ste. Croix, Switzerland

Continuation-in-part of Ser. No. 838,377, Sep. 30, 1977, Pat. No. 4,160,587, which is a continuation-in-part of Ser. No. 789,250, Apr. 20, 1977, abandoned, and Ser. No. 787,497, Apr. 14, 1977, abandoned. This application Feb. 8, 1979, Ser. No. 10,722

Claims priority, application Switzerland, Apr. 15, 1976, 004753/76; Apr. 21, 1976, 004961/76; Oct. 1, 1976, 012428/76

The portion of the term of this patent subsequent to Jul. 10, 1996, has been disclaimed.

Int. Cl.³ G03B *3/10*

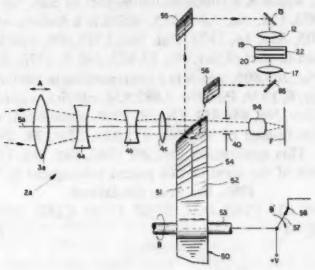
U.S. Cl. 354—25 **10 Claims**

1. In a camera having an objective including an axially shiftable lens member for focusing the objective upon an object

within its field of view to project an image of said object upon a receiving surface, the combination therewith of:

setting means operable to displace said shiftable lens member over its range of axial shiftability while holding the objective trained upon an object whereby light rays originating at a common point of said object converge upon said receiving surface in a focusing position of said shiftable lens member;

a pair of ancillary projection systems including two light reflectors interposed between said shiftable lens member and said receiving surface for intercepting light rays from



an object and directing the intercepted light rays over two separate paths away from the objective axis in the form of a first beam and a second beam; and

photoelectric comparison means illuminable via said projection systems for producing an in-focus signal in response to a coincidence of images produced by said beams, such coincidence occurring whenever said beams are constituted by light rays originating at a common point in an object plane conjugate with said receiving surface.

4,283,864

CUSHIONING MATERIAL CONSTRUCTION

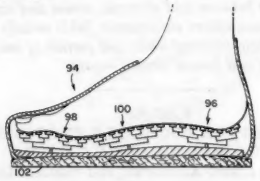
Donald E. Lipfert, Woolwich, Me., assignor to Deres Development Corporation, Greenwich, Conn.

Continuation of Ser. No. 747,681, Nov. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 347,069, Apr. 2, 1973, Pat. No. 4,033,567. This application Nov. 19, 1979, Ser. No. 95,788

Claims priority, application United Kingdom, Oct. 4, 1969, 48860/69

Int. Cl.[3] **A43B** *13/18;* **F16F** *3/02;* **A47C** *7/02, 23/00*

U.S. Cl. 36—28 **65 Claims**



1. A cushioning material construction comprising a mechanical support system comprising at least one module comprising a plurality of displaceable bearing means, particular ones of said bearing means being interconnected to others of said bearing means by a first lever-type arrangement, so as to define a grouping of bearing means, said first lever-type arrangement being operative upon displacement of one of said load support means in a first direction to apply a force to another of said bearing means in an opposite direction, such that the displaceable bearing means will displace to conform to the shape of an imposed load and provide for distribution of load supporting forces; wherein selected groupings of interconnected bearing means are further interconnected to other groupings of interconnected bearing means by means comprising a second lever-type arrangement in combination with main support means comprising an article of wearing apparel.

3. The cushioning material construction as claimed in claim **1** in which the article of wearing apparel is footwear.

4,283,865

OUTSOLE FOR SPORT SHOES

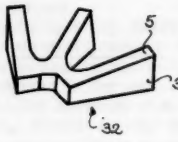
Adolf Dassler, Kreuzgasse, D-8522 Herzogenaurach, Fed. Rep. of Germany

Division of Ser. No. 884,484, Mar. 8, 1978, Pat. No. 4,180,923. This application Jul. 11, 1979, Ser. No. 56,601

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801964

Int. Cl.[3] **A43B** *13/04*

U.S. Cl. 36—32 R **1 Claim**



1. An outsole for a sports shoe comprising an outsole member of resilient material having a lower face, a plurality of profile projections projecting out of said lower face, said profile projections each comprising at least two elongate profile bodies of a slender rectangular shape, a plurality of profile projections being located along the edge of the sole, the profile bodies of said projections along the edge of the sole in each case being located close to one another at one end and diverging from one another from said one end under an acute angle between them laterally with respect to the edge of the sole and their height increasing above said lower face of the sole laterally to said edge of the sole.

4,283,866

CONVERTIBLE BUCKET ATTACHMENT CAPABLE OF EXCAVATION AND CLASPING

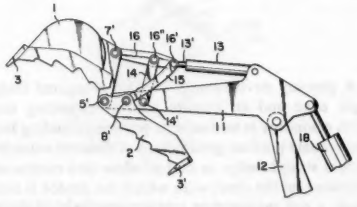
Junji Ogawa, No. 22-13, 2-chome, Hagioka, Hamamatsh-shi, Shizuoka-ken, Japan

Filed Feb. 15, 1980, Ser. No. 121,733

Claims priority, application Japan, Feb. 17, 1979, 54/19137[U]

Int. Cl.[3] **E02F** *3/70*

U.S. Cl. 37—117.5 **5 Claims**



1. A convertible bucket attachment for excavation and clasping adapted to be rockingly mounted to an arm which in turn is rockingly connected to a boom of an excavator machine, comprising:

a bucket portion **10** consisting of a bucket proper **1** and a complementary sub-bucket **2** pivotally engaged in the

upper ends for a rocking movement by a pair of common pivot apertures **5,5** for connection of said bucket portion to the distal end of the arm of an excavator machine;

a pair of upper stays **4,4** disposed in said proper bucket **1** and each having an upper link aperture;

a pair of upper link members **16,16** each having one end pivotally secured in said upper link aperture and the other end pivotally secured to the distal end of a plunger rod;

a pair of sub-link members **14,14** each having one end pivotally secured to one another opposed side plates of the arm and the other end pivotally secured to one another of said upper link members for association therewith; and

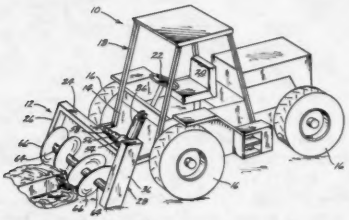
a pair of lower link members **15,15** each having one end pivotally secured to said sub-bucket **2** substantially below said common pivot aperture and associated with said upper link members and said sub-link members; thereby forming a link arrangement which is adapted to be actuated by one single cylinder actuator **13** to allow said bucket proper **1** and said sub-bucket **2** to perform operations of excavation and clasping.

4,283,867

BACKFILLING APPARATUS WITH ADJUSTABLE FILLING AUGERS

Stanley L. Brown, Lenox, Iowa, assignor to Roscoe Brown Corporation, Lenox, Iowa

Filed Dec. 5, 1979, Ser. No. 100,333
Int. Cl.³ E02F *5/22*
U.S. Cl. 37—142.5 **7 Claims**



1. A backfiller adapted to be mounted on a vehicle comprising:

a frame having an upper frame portion and two downwardly extending spaced apart side frame members;

means for mounting said frame to said vehicle;

an elongated torque member extending between said side frame members and having its opposite ends rotatably journaled in said side frame members,

first and second tube members mounted over said elongated torque member for longitudinal sliding movement along the longitudinal axis of said torque member;

helical flighting means mounted around said first and second tube members, the flighting means on said first tube member being oriented in a direction opposite from the flighting means on said second tube member;

securing means for detachably securing said first and second tube members to said torque member in a plurality of positions along the length of said torque member to permit selective adjustment of the relative positions of said first and second tube members with respect to one another;

power means connected to said torque member for imparting rotation to said torque member and said first and second tube member;

said first and second tube members each having an outer end adjacent one of said side frame members and an inner end, said inner ends of said first and second tube members being spaced apart a predetermined distance determined by the longitudinal positions of said first and second tube members on said torque member;

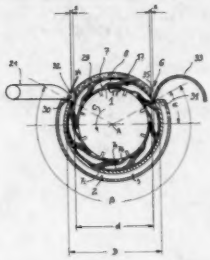
said securing means comprising at least one diametric hole in each of said first and second tube members, a plurality of diametric holes spaced longitudinally along the length of said torque member, and first and second bolt means extending through the diametric holes of said first and second tube members, respectively, said first and second bolt means also each extending through one of the diametric holes of said torque member.

4,283,868

IRONING MANGLE WITH PNEUMATICALLY PRESSURIZABLE ROLLER COVERING

Friedrich Geiger, Todtenweis, Fed. Rep. of Germany, assignor to Kleindienst GmbH & Co. Kg, Augsburg, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,589
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824479
Int. Cl.³ D06F *63/00, 71/36, 83/00*
U.S. Cl. 38—56 **10 Claims**



1. An ironing mangle comprising:

an ironing roller having a generally cylindrical outer surface and rotatable about a roller axis in a predetermined rotational sense;

a two-part sleeve substantially completely surrounding said roller and having a cylindrical inner surface juxtaposed with and spaced radially outwardly from said outer surface of said roller, said sleeve being formed with axially extending and angularly spaced intake and output slots subdividing it into an angularly large main part and an angularly small minor part, said minor part being rigid and of insulating material;

at least one cushion having an inner wall lying mainly on said outer surface, an outer wall between said inner wall and said inner surface of said sleeve, and a sealed periphery defining between said walls a pressurizable chamber; and

means for feeding a fluid under pressure into said chamber and thereby pressing an item to be pressed between said outer wall and said inner surface at said main part.

4,283,869

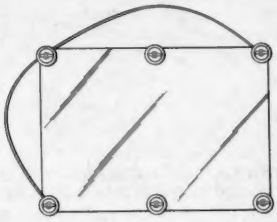
PORTABLE CHARTHOLDER AND TABLE

Leonard F. Rappa, P.O. Box 656, Linden, N.J. 07036

Filed Apr. 12, 1979, Ser. No. 29,560
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—10 D **6 Claims**

1. A portable chartholder and table comprising two rigid and transparent planar members secured together by manually operable securing means having a release mechanism, at least one flexible grab handle connected to at least one of said planar members and multiple cushioning-supporting means secured

on the perimeter of said planar members, said planar members cooperating in a manner whereby a chart can be positioned



contiguous with an inner surface of each of said planar members and readily read by the helmsperson of a moving boat.

4,283,870

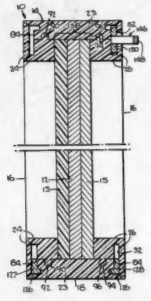
FRAME DEVICE

Peter J. Stetler, 144-30 Roosevelt Ave., Flushing, N.Y. 11354

Filed Feb. 18, 1976, Ser. No. 659,138

Int. Cl.³ G09F *1/12*

U.S. Cl. 40—154 **18 Claims**



1. A frame for artwork having a predetermined thickness and a periphery including a predetermined number of sides defining a plane, said frame comprising a plurality of frame members with opposite mitered end portions, the frame members corresponding in size and number to the predetermined number of sides of said artwork, said frame further including means for joining said opposite mitered end portions together to permit said frame members to surround the periphery of said artwork, at least one of the frame members corresponding to one of the peripheral sides of the artwork being an individual separate member unattached to the other frame members prior to assembly of said frame, said one frame member including a main body portion, first and second spaced and oppositely disposed limb members joined to said main body portion and extending to the opposite mitered end portions of said one frame member, said first and second limb members defining a holding channel for accommodating said artwork such that the plane of said artwork is substantially perpendicular to said main body portion, said one frame member further including engageable latching means provided on said first limb member and said main body portion for latching said first limb member to said main body portion in a first latch engaging position, said first limb member being movable with respect to said main body portion when the latching means on said main body portion and said first limb member is unengaged, said first limb member being immovable with respect to said main body portion when disposed in said first latch engaging position, and wherein engageable latching means are provided on said second limb member and the main body portion of said one frame member for latching said second limb member to said main body portion in a second latch engaging position, said second limb member being movable with respect to said main body portion when the latching means on said main body portion and said second limb member is unengaged, said second limb member being immovable with respect to said main body portion when disposed in said second latch engaging position, said first and second limb members having respective first and second artwork engaging edges defining opposite sidewalls of said holding channel when said first and second limb members are in said first and second latch engaging positions.

4,283,871

PANORAMIC PHOTOGRAPH ALBUM, AND METHOD FOR MAKING THE SAME

Melvin Applebaum, 75-03 192nd St., Flushing, N.Y. 11366; Len De Pas, 85-50 Forest Pkwy., Woodhaven, N.Y. 11421, and William C. Little, 2001 McGraw Ave., Bronx, N.Y. 10462

Division of Ser. No. 797,829, May 17, 1977, Pat. No. 4,183,162.

This application Mar. 28, 1979, Ser. No. 24,502

Int. Cl.³ G09F *1/10*

U.S. Cl. 40—158 R **4 Claims**

1. The method for making a double-wide panoramic photographic print and mounting it into a single-wide photograph album so that it can be displayed lying in a flat plane, said album including a binding edge, and said method including the steps of:

taking a panoramic picture, to produce a negative with a panoramic image thereon which extends horizontally substantially beyond what can be accommodated upon a single-wide sheet of photographic paper;

printing the negative on a single, integral sheet of double-wide photographic paper to produce an elongated, planar panoramic print;

cutting the integrally printed panoramic planar print into two print portions along a cutting line extending at a right angle to the longitudinal axis of the print and forming two planar panels each carrying thereon one of said portions of said print, said cutting line forming matting edges for the two print portions;

selecting separate, flexible hinge members for each of said planar panels, chosen so that the color tone of said hinge members is dark and generally blends with the color tones in the center portion of said panoramic print along said cutting line, each hinge member including a planar outer portion and an inner portion, separated by a transverse hinge portion;

fastening the planar outer portions of said separate, flexible hinge members with adhesive means to the rear sides of the two planar panels along the cut, mating edges of said two print portions, whereby a hinge line is formed immediately adjacent each of said mating edges by said transverse hinge portion; and

securing the inner portions of said separate, flexible hinge members to the said binding edge of said photograph album along a securing line spaced from said hinge lines, whereby to mount said two planar panels so they can be moved between a closed position wherein they are in face-to-face abutment and an open position wherein the panels are presented in side-by-side relationship along said

print cutting line, so that said panels lie in a common plane and display the panoramic image;

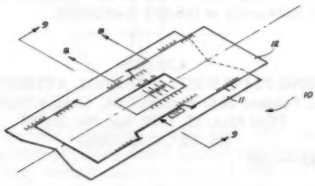
said separate, flexible hinge members being fastened and secured to provide a narrow gap between said hinge lines and said immediately adjacent cut, mating edges of said print portions when said planar panels are lying in said common plane in said open position, whereby said panels can be pivoted between said closed and said open positions without said cut, mating print portion edges coming into damaging engagement with each other.

4,283,872

ADJUSTABLE DISPLAY DEVICE

Gerrit A. Van Exel, 2300 Camino Escondido, Fullerton, Calif. 92633

Filed Jan. 31, 1978, Ser. No. 874,030
Int. Cl.³ G09F *11/00*
U.S. Cl. 40—491 **5 Claims**



1. An adjustable display device, comprising

two members which are linearly moveable in relation to each other, and a retaining means to retain and guide the first member in relation to the second member,

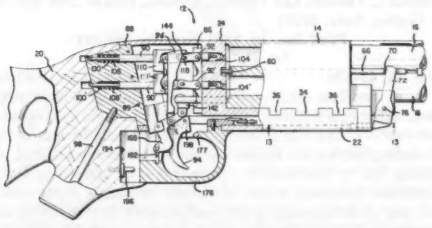
the retaining means being an integral part of the second member and formed by cutting through the thickness of said member, forming a tab which allows displacement of part of said member to retain and guide the peripheral edge of the first member the tab being defined by a first cut, essentially parallel to the direction of movement of the moveable member, and by a second and third cut on either end of the first cut, said second and third cuts being transverse, extending away from the centerline, and of unequal length, such that the ends of these cuts form guides, which are displaced from each other in the direction perpendicular to the direction of movement by an amount equal to, and in the same direction of, the offset in the guided peripheral edge of the moveable member.

4,283,873

BREECH LOADING SHOTGUN OR THE LIKE

Jack McIntyre, P.O. Box 491, Troy, N.C. 27371

Filed Jun. 8, 1979, Ser. No. 46,956
Int. Cl.³ F41C *11/10*
U.S. Cl. 42—45 **12 Claims**



1. In a breech-loading firearm having a frame; an extendable and retractable breech-locking mechanism effective when extended to prevent opening of the breech assembly of said firearm, and when retracted to permit opening of said breech assembly; a firing mechanism including a trigger having a lower portion extending downwardly from said frame and adapted to be pulled rearwardly to actuate said firing mechanism; and a trigger guard encircling said lower portion of said trigger; the improvement comprising:

mounting means mounting said trigger guard upon said frame for sliding movement of said trigger guard longitudinally of said frame between first, second and third spaced positions;

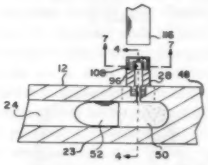
and cooperating means operatively associated with said trigger guard and with said firing and breech-locking mechanisms for retracting said breech-locking mechanism in response to movement of said trigger guard to its said first position, for extending said breech-locking mechanism and preventing operation of said firing mechanism in response to movement of said trigger guard to its said second position; and for permitting operation of said firing mechanism upon movement of said trigger guard to its said third position.

4,283,874

MUZZLE LOADING FIREARM

James C. Vaughn, 394 Yancey Rd., Madison, Ala. 35758

Filed Dec. 3, 1979, Ser. No. 99,653
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—51 **1 Claim**



1. A muzzle loading firearm comprising:

a firearm barrel having a breech region through which there is an opening running from exterior to interior of the barrel, and the interior wall of at least an outer end region of said opening being threaded;

an elongated tube having:

said tube terminating in a plane surface at one end adjacent to said first end region, which plane surface lies generally normal to the direction of said opening, and

first and second ends of said tube being threaded, and said first end being adapted to mate with said interior threaded opening in said barrel;

a cup having a protrusion on its inner end surface and having inner side wall threads adapted to loosely thread over said second end of said elongated tube;

a shot shell primer comprising:

a tubular body having an outer diameter corresponding to the inner diameter of said first end region of said elongated tube,

an explosive charge contained within said tubular body,

a generally flat, circular end member closing one end of said tubular body and extending radially outward from said tubular body to form a flange, and said end member including a central membrane adapted to communicate a firing force to said explosive charge when struck, and

said tubular body is positioned within said first end region of said elongated tube with said flange resting against said plane surface of said elongated tube; and

spring loaded hammer means supported by said barrel for applying a small area force to said central membrane of said shot shell primer;

whereby, when operated, said hammer means provides a force which is communicated through said cup to said

membrane to ignite said explosive charge within said elongated tube, which tube in turn effectively provides a single exit path for the ignited explosive to the interior of the breech of the barrel, enabling a projectile propellant therein to be reliably fired.

4,283,875

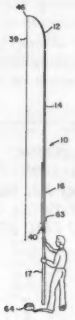
LINE RETRIEVING AND DISPENSING DEVICE

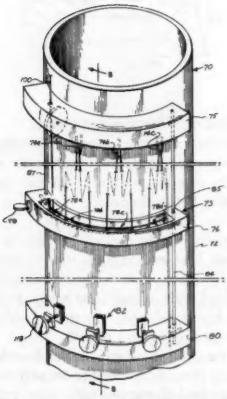
Dennis Daniels, Rte. 2 Box 782, Quilcene, Wash. 98376

Continuation-in-part of Ser. No. 949,947, Oct. 10, 1978, Pat. No. 4,216,602. This application Nov. 13, 1979, Ser. No. 93,681

Int. Cl.³ A01K *87/00*

U.S. Cl. 43—18 R **7 Claims**





1. A fishing line retrieving and casting device for use on an elongated pole having at least an outer and inner portion, comprising:

a pole having inner and outer portions,

line storage means on said inner portion for accumulating wraps of line terminating at a terminal end and adapted to have an object attached to said terminal end,

said line storage means including a plurality of transversely spaced, stationary, first line guiding means mounted on said outer portion of said pole for receiving a plurality of wraps of said line, a plurality of movable, transversely spaced, second line guiding means freely movably mounted on said inner portion of said pole for movement from a first fully retracted position remote from said first line guiding means to a second fully extended position adjacent said first line guiding means and for receiving respective opposite wraps of said line from said first line guiding means with transversely spaced, non-overlapping partial loops of line each defined by a single wrap only around each set of corresponding transversely spaced first and second line guiding means, and actuating means for respectively letting out line by allowing reduction in the lengths of said wraps or retracting line by lengthening the wraps, said actuating means including means for moving the second line guiding means in a single movement toward and away from the first line guiding means between said fully extended and fully retracted positions, including wrap retaining means mounted on said inner portion of said pole, said movable second line guiding means being located between said fixed first line guiding means and said wrap retaining means and movable to a retracted position adjacent said wrap retaining means, said wrap retaining means automatically gripping said spaced wraps of line when said movable line guiding means are retracted, and means for releasing said wraps from said wrap retaining means independently of said movable line guiding means whereby said movable line guiding means can be extended to adjacent said first line guiding means and said wraps can thereafter be separately released to move outwardly as the line is extended.

4,283,876

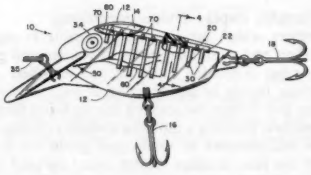
FISHING PLUG WITH INTERNAL ATTRACTERS

Donald C. Volenec, 5042 Frederick St., Omaha, Nebr. 68106

Filed Mar. 22, 1979, Ser. No. 22,935

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.33 **21 Claims**



1. A fishing plug having a closed body having an open space therein and having attached hook means on its outer side, a plurality of elongated flexible attracters in said open space in said body, said body being transparent adjacent said attracters and said attracters being sufficiently flexible that when said plug is reeled in on a line in conventional plug-fishing portions of said flexible attracters will bend first in one direction then in an opposite direction to a substantial extent visible to fish through said body, the majority of said attracters being unattached to said body along the majority of their length, and also free of being crushed together so as to remain substantially unmassed during said reeling whereby they are free to move substantially independently of each other during said reeling.

4,283,877

WEEDLESS- MULTI-BARB FISHHOOK

Darrell C. Onstott, and Velma L. Onstott, both of 2550 21st St., Gering, Nebr. 69341

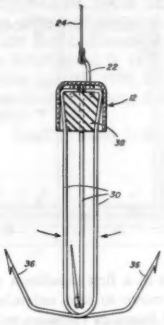
Filed Jun. 16, 1980, Ser. No. 160,011

Int. Cl.³ A01K *83/00*

U.S. Cl. 43—34 **7 Claims**

1. A weedless multi-barb fishhook including a head structure, defining a hollow cavity including an open side opening outwardly of one side of the head structure, said head structure including line anchor means thereon for attaching one end of a fishing line to said head structure, a pair of oppositely facing fishhooks including a pair of shanks yieldingly supported at one pair of corresponding base end portions thereof within said cavity in laterally spaced apart relation and for swinging movement of the other pair of corresponding end portions thereof toward and away from each other, said other pair of corresponding end portions including oppositely curved hook

portions opening toward said one pair of one end portions, said one pair of end portions being telescoped within said cavity in position closely opposing opposite sides of said cavity, and a resilient body disposed within said cavity between said one pair of base end portions of said shanks and yieldingly resisting movement of said base end portions toward each other, said base end portions including angulated terminal ends anchored



in said cavity and projecting toward each other, said cavity defining narrow portions thereof in which said base end portions and said terminal ends are received with said base end portions swingable through said narrow portions toward and away from each other, said cavity including inwardly projecting portions spaced toward said open side of said cavity from said terminal ends preventing withdrawal of the latter and thus said fishhooks from said cavity.

4,283,878

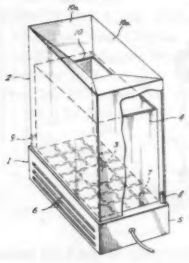
INSECT TRAP

Alistair C. Hill, and Lyn Davies, both of Sittingbourne, England, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Continuation of Ser. No. 854,784, Nov. 25, 1977, abandoned. This application Jan. 16, 1980, Ser. No. 112,792

Int. Cl.³ A01M *1/14*

U.S. Cl. 43—114 **8 Claims**



1. An insect trap, comprising:

a chimney member;

an electrically powered heater located underneath the base of said chimney member with the base of said chimney member being mounted directly to said heater so as to allow access thereto only through the top of said chimney;

a reservoir containing an insect pheromone, located adjacent to and above said heater; and

a tacky substance located inside said chimney member;

whereby the heater evaporates the insect pheromone and generates a convection flow of air which carries the pheromone out of the top of the chimney into the surrounding atmosphere and the insects thereby lured by the pheromone through the top of the chimney become trapped by the tacky substance.

4,283,879

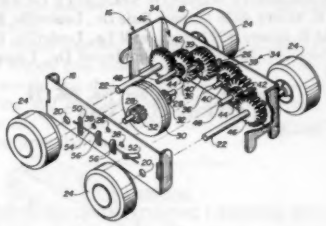
TOY VEHICLE WITH FOUR-WHEEL DRIVE

Kwok W. Tsui, Wanchai, Hong Kong, assignor to Arco Industries Ltd., Kowloon, Hong Kong

Filed Apr. 25, 1980, Ser. No. 143,852

Int. Cl.³ A63H *29/20, 17/00*

U.S. Cl. 46—209 **2 Claims**



1. A toy wheeled vehicle comprising in combination, an elongated chassis, having a pair of parallel side plates, a pair of parallel axles extending transversely through bearing holes in said side plates of said chassis and spaced longitudinally therealong adjacent opposite ends of said chassis, pairs of wheels affixed respectively to opposite ends of both said axles, and a motor mounted on said chassis which comprises an inertia type flywheel supported on a shaft intermediately between said axles in bearing holes in said side plates and interengaging gear trains mounted respectively between the shaft of said fly-wheel and both axles to produce a unidirectional four-wheel drive for said vehicle, the improvement comprising mounting the gears of said trains upon shafts extending between bearing holes in said side plates disposed substantially along straight lines between the bearing holes for the axles of said wheels and shaft of said flywheel, and including in each of said gear trains, gear throw-out mechanism operable upon one gear of each train automatically to disengage the same from driving connection with other gears in said trains when any of said wheels are stopped from rotating while said flywheel is still rotating and thereby prevent injury to said gear trains, said throw-out mechanism comprising opposite pairs of short slots in said side plates of said chassis supporting the shafts of said one gear of each train, the slots for the shafts of the said throw-out gears being at angles to each other respectively in said side plates.

4,283,880

PEAT PAPER AND A METHOD FOR ITS MANUFACTURE

Öyvind Fjeldsa, Nedergardsgatan 16, Lilla Edet, Sweden (463 00)

Filed Oct. 23, 1979, Ser. No. 87,473

Claims priority, application Sweden, Oct. 31, 1978, 7811265

Int. Cl.³ A01G *31/00*

U.S. Cl. 47—56 **3 Claims**

1. An improved peat paper for use in connection with plant-

ing, sowing or weed-control containing peat fibers, cellulose fibers and a bonding agent; the improvement comprising:

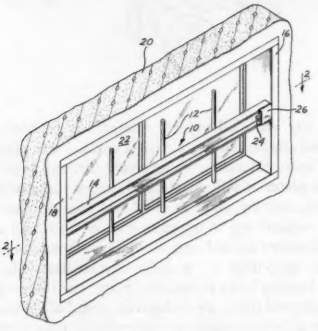
said cellulose fibers being a sheet or web supporting said peat fibers, said peat fibers being loose, noncompressed fibers and being joined to said cellulose fibers in a dry-formation process and by means of said bonding agent so as to form paper-like sheets or webs having a weight in the range of 100 to 350 g/cm.

4,283,881

CASEMENT WINDOW SECURITY GUARD

Charles E. Moore, 4426 Manner Dale Dr., Louisville, Ky. 40220; Donald K. Moore, 6922 Peppermill La., Louisville, Ky. 40228, and James M. Moore, 5109 Braidwood Dr., Louisville, Ky. 40219

Filed Jun. 5, 1980, Ser. No. 156,724
Int. Cl.[3] E05B *65/00*; E06B *3/68*
U.S. Cl. 49—35 **7 Claims**



1. A security guard for a window having opposed frame members mounted in a building structure, the guard comprising:

an elongated channel member constructed and arranged to fit within the window opening between said opposed frame members, the channel member having a confined flanged area facing inwardly of the building;

mounting means fixedly secured to and extending from one end of said channel member and adapted to engage complementary recess means formed in one of the opposed frame members;

key actuated lock means fixedly secured within said confined flanged area of said channel member at the end opposite said mounting means, said lock means having a retractable bolt adapted to extend from said opposite end of said channel member into a complementary recess formed in the other of said opposed frame members;

lock cover means fixedly secured to said channel member substantially coextensive of said lock means, said cover means constructed and arranged to envelope said lock means within said confined flanged area at said opposite end of said channel member.

4,283,882

SAFETY FLUSH BOLT ENTRANCE DOOR SYSTEM

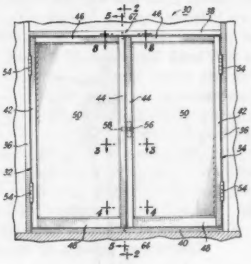
S. Eugene Hubbard, Niles; Richard A. Meisterheim, Dowagiac, both of Mich., and Ernest B. Symon, South Bend, Ind., assignors to Kawneer Company, Inc., Niles, Mich.

Filed Oct. 17, 1979, Ser. No. 85,606
Int. Cl.[3] E05C *15/02*; E05B *65/10*
U.S. Cl. 49—141 **41 Claims**

1. A door mounted for movement between open and closed positions with respect to a door frame, comprising:

latch means on said door movable between a latched position engaging said frame for securing said door in said closed position and an unlatched position disengaged from said frame permitting movement of said door toward said open position; and

control means remote from said latch means for controlling the same to prevent disengagement from said frame in response to opening force applied to said door when said



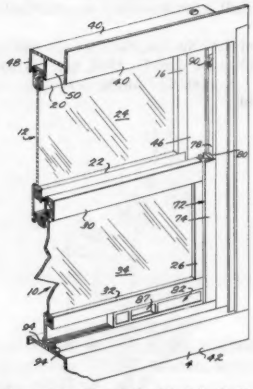
control means is in a first condition and to permit said latch means to move to said unlatched position, disengaged from said frame in response to opening force applied to said door when said control means is in a second condition, said control means including means normally biasing said latch means toward said unlatched position.

4,283,883

WINDOW ASSEMBLY HAVING REMOVABLE SASH

Maurice E. Sterner, Jr., York, Pa., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Jan. 3, 1980, Ser. No. 109,408
Int. Cl.[3] E05D *15/22*
U.S. Cl. 49—194 **10 Claims**



1. In a window assembly of the kind including at least two window sashes having inwardly facing surfaces and outwardly facing surfaces, said sashes being fitted into a perimeter frame formed by spaced apart longitudinal members joined at their ends to the ends of spaced apart transverse members, and means mounting at least one of the sashes for sliding movement in said frame in a longitudinal direction between a closed position and an open position and for inward movement relative to the frame, the improvement comprising a sash retainer mounted on each longitudinal frame member for longitudinal sliding movement relative to the respective frame member, each retainer having a longitudinal dimension about equal to the longitudinal dimension of said slidable sash and being slidable between a first position coextensive with said slidable sash and a second position in which the retainer is longitudi-

nally offset from said slidable sash, each retainer having a longitudinal fin overlying the inwardly facing surface of the respective longitudinal edge of said slidable sash when said sash and said retainer are coextensive to thereby provide support and sealing said surface; and manually releasable latches for releasably connecting said slidable sash to said retainers.

4,283,884

AUTOMATIC BASE SEAL

Claude G. Dumenil, and Louis P. Dumenil, both of 4075, Route de Neufchatel, 76230 Bois Guillaume, France

Division of Ser. No. 813,076, Jul. 5, 1977, Pat. No. 4,170,846. This application Jun. 15, 1979, Ser. No. 49,190

Claims priority, application France, Jul. 7, 1976, 76 20773; Apr. 26, 1977, 77 12517

Int. Cl.³ E06B 7/20

U.S. Cl. 49—307 **13 Claims**

1. An automatic base seal for a panel comprising, a molding containing a driving means constituted by a one piece deformable rod whose one extremity projects from one extremity of the molding, in the open position of the panel, and whose other extremity is held against movement relative to the molding, said rod being forced axially into the molding by contact with the door frame element of said one extremity at the time of the closing of the panel, and in deforming itself displaces an elongated section supporting a sealing element, wherein said molding comprises a cross-section in the shape of an inverted U having a top wall, downwardly extending side walls, and two flanges projecting inwardly of the molding and toward each other from said side walls, said top wall, side walls, and flanges defining a longitudinal groove within said molding and in which said deformable rod is slidable and guided by surfaces of said walls and flanges, said flanges being cut away near the central part of the base seal to define a slot in said groove through which said rod projects downwardly out of the said groove, along one part of its length, at the time of closing of the panel.

4,283,885

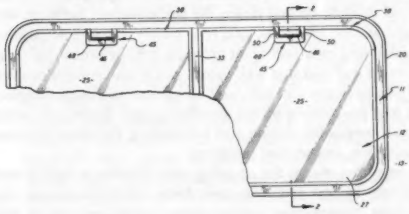
EMERGENCY RELEASE CLOSURE

David W. Remick, Camillus, and Charles J. Stankivitz, Sr., Wamosville, both of N.Y., assignors to The O. M. Edwards Company, Inc., Syracuse, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,148

Int. Cl.³ E06B 7/18

U.S. Cl. 49—466 **12 Claims**



1. A safety release closure that is capable of opening toward either the interior or the exterior of a vehicle to provide an emergency exit from the vehicle, the closure including

a mounting frame having at least one opening for receiving a window sash therein, the inside surface of said opening having a raised center section extending about the mid-depth of the opening and bevelled walls sloping downwardly and outwardly from the raised section towards the interior and exterior edges of said opening whereby the opening is wider across it two edges than across its mid-depth region,

a sash generally complimenting the opening in the frame which is centered within said opening,

a first deformable margin seal positioned about the interior edge perimeter of the sash and a second deformable margin seal positioned about the exterior edge perimeter of the sash with the seals being disposed in biasing contact between the sash and the frame to support said sash within said frame,

first pull means attached to said first deformable margin seal and a second pull means secured to said second deformable margin seal that are independently engagable to enable the seal associated to be pulled from between the frame and the sash thereby allowing the sash to be removed from the frame.

4,283,886

WORKPIECE CONDITIONING GRINDER SYSTEM

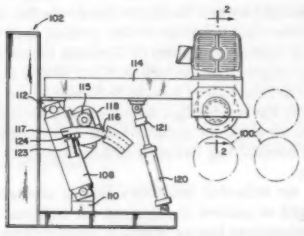
Robert F. Obear, Everett, Wash., assignor to Western Gear Corporation, Everett, Wash.

Continuation of Ser. No. 810,520, Jun. 27, 1977, Pat. No. 4,209,948, which is a division of Ser. No. 748,293, Dec. 7, 1976, Pat. No. 4,100,700. This application Oct. 1, 1979, Ser. No. 80,927

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ B24B 7/02

U.S. Cl. 51—92 R **4 Claims**



1. A high production grinding machine for conditioning an exposed, generally planar surface on an elongated workpiece comprising:

a grinding station having a rigid frame;

means for providing relative movement between the workpiece and the grinding station along the longitudinal axis of the workpiece;

a powered grinding wheel rotatably mounted about an axis which is parallel to the longitudinal axis of said workpiece;

a first, elongated support arm pivotally secured to said frame about a first axis parallel to the longitudinal axis of said workpiece;

a second, elongated support arm pivotally secured to said first support arm about a second axis parallel to said first axis, said second support arm carrying said grinding wheel;

first actuator means for selectively pivoting first support arm about said first axis;

second linear actuator means having one end pivotally connected to said second arm and the opposite end pivotally connected to said frame, said second actuator means being generally parallel to said first support arm to form a parallelogram structure such that the angle of said second arm

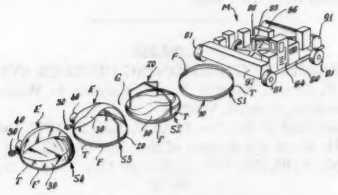
with respect to said frame and the position of said grinding wheel in a direction parallel to the longitudinal axis of said first support arm remains substantially constant as said first arm is pivoted about said first axis.

4,283,887

SOLAR HELIOSTAT ENCLOSURE, ENCLOSURE FOUNDATION AND INSTALLATION METHOD AND MACHINE THEREFOR

Richard H. Horton, Schenectady, and John J. Zdeb, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 21, 1977, Ser. No. 844,401
Int. Cl.³ E04B *1/345;* F24J *3/02*
U.S. Cl. 52—2 **5 Claims**



1. An enclosure for a heliostat reflector or concentrator of a solar energy system comprising:

A. a foundation, said foundation including a toroidal bag positioned by and having its lower portion disposed in a circular trench formed in the ground, said toroidal bag being formed by a sheet of formable material that is partially disposed in the trench, filled with a weighted filler material and shaped so as to be formable into said toroidal bag by having its edges juxtaposed and secured to thereby form an enclosed toroidal space and enclose said filler, said toroidal bag having a circular upwardly facing portion;

B. an air inflatable protective bubble configured and arranged to enclose and protect the heliostat reflector or concentrator, having a lower circular skirt portion secured to said upwardly facing portion of said toroidal bag, and

C. a multilegged metal frame secured in the ground, and configured and arranged not to normally contact said bubble when it is fully inflated but to support it when it is not fully inflated, said frame also functioning as a lightning protector for the contents of said bubble.

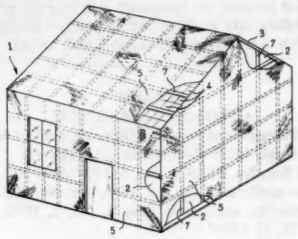
4,283,888

METHOD AND A COVERING FOR HEAT INSULATION AND PROTECTION OF A CONSTRUCTION

Jacques Cros, Cambon, 81210 Roquecourbe, France

Filed Feb. 22, 1979, Ser. No. 14,210
Claims priority, application France, Mar. 7, 1978, 78 06426
Int. Cl.³ E04B *1/34, 1/74*
U.S. Cl. 52—3 **4 Claims**

1. A house having a roof and impermeable external walls, a translucent open-mesh knitted fabric of glass fiber threads on the exterior of at least said external walls, said meshes being substantially two to six times the diameter of said threads, and means spacing said fabric from said external walls to maintain an empty space between the external surfaces of the external walls and said fabric thereby to induce a greenhouse effect in said empty space while at the same time permitting circulation



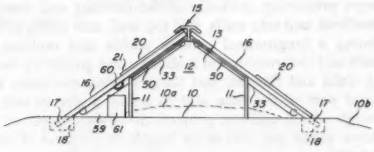
of air through said fabric so as to avoid condensation of moisture in said empty space.

4,283,889

GREENHOUSE CONSTRUCTION

Michael D. Dunn, Emerald Acres, Rte. 2, Mineral, Va. 23117

Filed Dec. 19, 1979, Ser. No. 105,148
Int. Cl.³ E04B *1/343, 7/16*
U.S. Cl. 52—66 **9 Claims**



1. A greenhouse comprising:

(a) flooring means and side and end wall means defining a plant growing area,

(b) roof structure means comprising ridge means above said growing area, rafter means sloping from said ridge means downwardly and outwardly past said side wall means to terminal end portions, and anchor means securing said terminal end portions to said flooring means,

(c) roof means slidably mounted on said sloping rafter means and slidable up and down the slope thereof between first and second positions, said roof means in said first position extending over said plant growing area between said ridge means and said side wall means and in said second position lying between said side wall means and said anchor means,

(d) roof positioning means coupled to said slidably mounted roof means for sliding and positioning the same between said first and second positions,

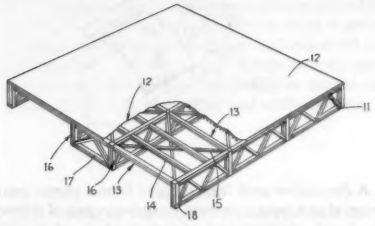
(e) retaining means for securing said slidably mounted roof means against disengagement from said rafter means, and

(f) light transmissive ceiling means positioned above said growing area and in spaced relation to said slidably mounted roof means in the first position thereof for providing a heat insulating dead air space therebetween above said growing area and for admitting light to said growing area in other positions of said slidably mounted roof means.

4,283,890
TRANSPORTABLE BED FOR INDUSTRIAL EQUIPMENT

Shojiro Takeda; Bunji Kinno, and Yutaka Yamaguchi, all of Chiba, Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Jan. 24, 1979, Ser. No. 5,953
Claims priority, application Japan, Feb. 7, 1978, 53/11986
Int. Cl.[3] E04B 1/34, 1/35
U.S. Cl. 52—143 6 Claims



1. A transportable bed for supporting industrial equipment and machinery and adapted for use in the construction of industrial installations wherein a part or the entirety of the equipment is erected on the transportable bed at a factory to form a unit structure having a weight ranging from 500 to 5,000 tons including said transportable bed, transporting said unit structure to the installation site by means of a heavy duty transportation vehicle or by a heavy duty transportation vehicle and a vessel in combination, installing said unit structure on foundations prepared at the installation site and connecting said equipment with other parts of the industrial installation thus completing the construction, said transportable bed comprising:

a substantially rectangular, horizontal floor having a width of from about 15 to about 50 meters and a length of from about 15 to about 60 meters, said floor being made of structural floor material adapted to support industrial equipment, machinery, piping and electric wiring of the industrial installation;

a central strengthening column extending downwardly from said floor, said central strengthening column comprising two upright, elongated, parallel, horizontally spaced-apart trusses whose upper ends are secured to said floor, said trusses extending lengthwise of said floor from one longitudinal end to the other longitudinal end of said floor, said trusses being spaced laterally inwardly from the respective side edges of said floor substantially equal distances to provide unobstructed zones located on opposite sides of said central strengthening column which zones each have a size sufficient to receive the load-carrying portion of a heavy duty transportation vehicle, said zones extending lengthwise of said floor, said central strengthening column having coplanar, horizontal, transverse beams attached to and extending between the lower ends of said trusses and defining a horizontal base for said transportable bed, said central strengthening column also having transversely extending pillars and inclined structural members extending between and secured to said trusses at longitudinally spaced positions along the lengths of said trusses, said central strengthening column supporting said floor a distance of from about 0.5 to about 3.0 meters above said horizontal base at the lower end of said central strengthening column;

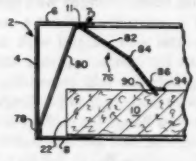
a pair of upright, elongated, parallel, lateral support trusses extending downwardly from said floor adjacent said side edges of said floor, said lateral support trusses being parallel with the trusses of said central strengthening column and defining the outer sides of said zones, the lower ends of said lateral support trusses being substantially coplanar with said horizontal base at the lower end of said central strengthening column;

a horizontal floor-reinforcing structure made of reinforcing beams lying directly underneath said floor and extending between the upper end of said central reinforcing column and the upper ends of said lateral support trusses and defining a horizontal bearing surface at the upper ends of said zones for engagement with said load-carrying portion of the heavy duty transportation vehicle.

4,283,891
CEILING TILE SYSTEM

Wolfgang W. Moeller, 4 Glen Cove Dr., Glen Head, N.Y. 11545

Filed Jul. 5, 1979, Ser. No. 55,219
Int. Cl.[3] E04B 5/52
U.S. Cl. 52—144 16 Claims

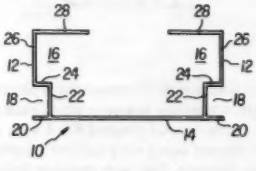


1. In an acoustical ceiling tile system comprising a molding member within which is disposed at least one fibrous acoustical ceiling tile of the type which can be pierced by a prong wherein urging means are employed to urge said fibrous acoustical ceiling tile downwardly and/or in a direction away from said molding, the improvement to simultaneously urge the fibrous acoustical ceiling tile downwardly and away from a vertical wall of said molding wherein said urging means comprises a unitary resilient spring clip, a resilient portion of which engages against a vertical wall of said molding and thence against an upper surface of a fibrous acoustical ceiling tile and simultaneously, while in engagement with said upper surface of said ceiling tile, against a surface of said molding above said tile and opposed thereto.

4,283,892
METAL CONSTRUCTION STUD AND WALL SYSTEM INCORPORATING THE SAME

Larry B. Brown, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 930,392, Aug. 2, 1978. This application Apr. 7, 1980, Ser. No. 137,734
Int. Cl.[3] E06B 1/06; E04B 2/72
U.S. Cl. 52—213 7 Claims



1. A one-piece, semi-hollow extruded metal construction stud, said stud comprising a pair of opposed sidewalls in parallel spaced relationship, each of said sidewalls comprising a pair of oppositely facing, open channels, said oppositely facing, open channels of each sidewall sharing a common flange, one of said oppositely facing, open channels of each sidewall being open to the interior of said stud and combining with the corresponding channel of the other sidewall open to the interior of said stud to form a common channel and the other of said

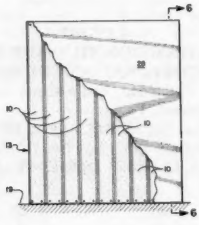
oppositely facing, open channels of each sidewall being open to the exterior of said stud to form a pair of oppositely facing, co-planar channels, a flange apart from and parallel to said common flange for each of said channels open to the interior of said stud, said flanges apart from and parallel to said common flange for each of said channels open to the interior of said stud being in co-planar relationship and combining to define a first substantially flat exterior wall of said stud, a flange attached to and perpendicular to said common flange for each of said channels open to the interior of said stud, said flanges attached to and perpendicular to said common flange for each of said channels open to the interior of said stud defining a second and a third substantially flat exterior wall of said stud respectively, the interior of said oppositely facing channels open to the exterior of said stud each defining a groove adapted to receive a straight-cut edge of a piece of construction board or the like, each of said sidewalls being arranged with respect to the other such that said stud is symmetrical about a centerline between said sidewalls, a central web integral with and extending between said sidewalls for connecting said sidewalls together, said web extending between said oppositely facing channels open to the exterior of said stud, and a flange apart from and parallel to said common flange for each of said channels open to the exterior of said stud, said web and said flanges apart from and parallel to said common flange for each of said channels open to the exterior of said stud being integral and in co-planar relationship and combining to define a fourth substantially flat exterior wall of said stud.

4,283,893

METHOD AND APPARATUS FOR FORMING A STUDLESS WALL SYSTEM

Duane W. Flake, 10366 S. State, Salt Lake City, Utah 84070

Filed Apr. 27, 1979, Ser. No. 33,962
Int. Cl.³ E04B *2/28*
U.S. Cl. 52—241 **7 Claims**



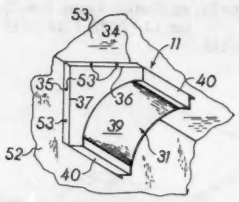
1. A studless wall assembly comprising a plurality of individual, lightweight, composite beams or posts, each independently preformed as a single metal channel filled with a cementitious material, said channel being very narrow relative to its length and having an elongate, flat, web member bordered laterally by respective substantially correspondingly elongate flange members, the said beams or posts being upstanding side-by-side with the flange members of adjoining beams or posts contiguous to make a plurality of mutually spaced panel walls; spacer members between the panel walls; means securing each beam or post of each panel wall to a spacer member, with the cementitious material surface of the outermost panel walls forming an exterior surface of the wall assembly; and means immobilizing at least one spacer member between each said pair of panel walls.

4,283,894

DECORATIVE ARCH FORM

Gary L. Raty, 2323 Belknap Ave., Billings, Mont. 59101

Continuation of Ser. No. 899,749, Mar. 24, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,905
Int. Cl.³ B44F *7/00*
U.S. Cl. 52—311 **5 Claims**



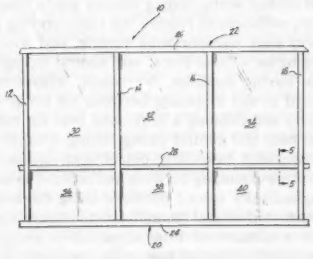
1. A decorative arch form molded from a plastic material as an integral unit, said arch form including a pair of side sections, each of said side sections having two edges substantially perpendicular to one another, integral flange members extending along substantially the full length of said perpendicular edges of each of said side sections with lines of reduced thickness at the junctures of the flange members with said sections, said flange members having tapered edges, a plurality of openings arranged along the length of said flange members intermediate the width thereof, said side sections being disposed in a substantially parallel spaced relationship with said flange members of one of said side sections in alignment with said flange members of the other of said side sections, a decorative facia section connecting corresponding edges of said aligned side sections and extending from the far ends of said aligned flange members of said parallel side sections to the far ends of said flange members which are perpendicular thereto, whereby said arch form can be attached to connecting ceiling and wall panels with major surfaces of said flange members bearing against surfaces of said panels.

4,283,895

THERMALLY IMPROVED EXPANDED STORE FRONT SYSTEM

Ronald D. Sukolics, Creve Coeur, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 951,921, Oct. 16, 1978, Pat. No. 4,214,415. This application Nov. 5, 1979, Ser. No. 91,256
Int. Cl.³ E04B *1/62, 2/88*
U.S. Cl. 52—395 **6 Claims**



1. An improved fastener for securing a first cold metal section to a second warm metal section so as to provide a thermal break therebetween comprising:

a unitary non-metallic insulating portion;

said insulating portion being provided in part with a threaded hole;

a screw portion;

said screw portion comprising a head portion and a threaded stem portion;

said threaded stem portion being received within said threaded hole;

one of said metal sections being provided with means for securing said head portion thereto;

the other of said metal sections being provided with means for receiving said insulating portion such that said one metal section abuts one side of a first part of said insulating portion and said other metal section abuts a second side of said first part of said insulating portion so as to provide a thermal break therebetween when said one metal section is assembled to said other metal section wherein said first part and said second part are adapted to be moved relative to each other along the axis of said screw portion.

4,283,896

TIE ANCHOR FOR SANDWICH PANELS OF REINFORCED CONCRETE

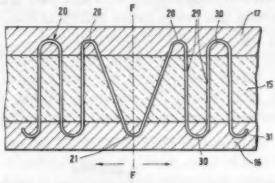
Siegfried Fricker, Wurmbergerstrasse 30-34, 7135 Wiernsheim, Fed. Rep. of Germany, and Horst Reinkensmeier, Niefern-Öschelbronn, Fed. Rep. of Germany, assignors to Siegfried Fricker, Wiernsheim, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,373

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849520

Int. Cl.³ E04C *2/26;* E04B *2/30*

U.S. Cl. 52—410 **4 Claims**



1. A tie anchor for sandwich panels and the like, particularly panels of the type which consist of inner and outer panel layers of concrete and an intermediate layer of an at least partially compressible thermally insulating material, the tie anchor comprising:

a continuous strip or band of steel which is shaped into a series of undulations defined by opposing loop portions and substantially straight leg portions connecting the loop portions, the spacing between the opposing loop portions being such that they alternatingly reach into the inner and outer panel layers; and

means for anchoring the opposing loop portions in the concrete of the associated inner and outer panel layers; and wherein

at least one centrally located leg portion is a diagonal leg portion which is oriented at an angle to a transverse plane that is perpendicular to the panels, thereby serving as a diagonal brace between itsadjoining loop portions in the inner and outer panel; and

the other leg portions on both sides f the central diagonal leg portion, or portions, resectively, are oriented parallel to each other and to te transverse plane, thereby serving as parallel links which, by bending within the thickness of the compressble intermediate layer, are capable of accommodating longitudinal displacements of their embedded opposing loop portions which occur, when the inner and outer panels expand and contract unequally in response to temperature changes.

4,283,897

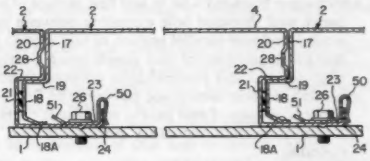
SNAP ACTION PANEL WALL CONSTRUCTION

LeRoy Thompson, Sewickley, Pa., assignor to Steelite, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 13,910, Feb. 22, 1979, which is a continuation of Ser. No. 754,756, Dec. 27, 1976, abandoned. This application Feb. 1, 1980, Ser. No. 117,500

Int. Cl.³ E06B *3/54;* E04B *2/72*

U.S. Cl. 52—489 **2 Claims**



2. A panel wall construction comprising:

a plurality of spaced girts defining a framework,

a plurality of construction panels comprising sheet metal sections, said sections defining walls and having opposite interengaging panel edges, one of said edges shaped to define a U-shaped socket and provided with a flange extending away from the socket, the edge of the flange being bent to form a narrow web extending upwardly from said flange, the other edge provided with a U-shaped tongue, said panels being secured to the girts by fasteners passing through said flange, each of said panels interengaging adjacent panels to form a continuous wall; and

a plurality of clips held against the flange by said fasteners, each of said clips having a folded edge for clamping over the web of the flange on the panels and a flexible tab along the other edge of the clip bent upwardly from said flange and toward said socket such that an unfastened panel may be moved into place by inserting the U-shaped tongue into the U-shaped socket whereby the tab is depressed until the tongue has moved past it toward the socket and then the tab snaps to its undepressed original position for securing the tongue should it be pulled away from the socket.

4,283,898

WALL PANEL CLAMPING APPARATUS

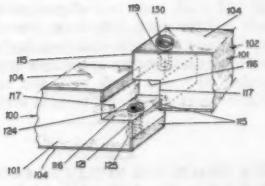
Jorge C. Claver, Barcelona, Spain, assignor to Cualitas Industrial, S.A., Barcelona, Spain

Filed Mar. 22, 1979, Ser. No. 22,892

Claims priority, application Spain, Mar. 22, 1978, 234874

Int. Cl.³ E04C *1/10, 1/30*

U.S. Cl. 52—584 **9 Claims**



1. A wall panel clamping apparatus comprising:

a first wall panel, said first panel having a first surface and an opposed parallel second surface, said first surface extending beyond said second surface at the end of said panel, said end being comprised of planar portions arranged to form an L-shaped profile, said L-shaped profile including two portions perpendicular to said first and second surfaces and one portion parallel to said first and second surface;

a transverse unthreaded hole in said first surface of said first

panel, said hole extending between said first surface and said parallel portion of said first panel;

a second wall panel, said second panel having a first surface and an opposed parallel second surface, said second surface extending beyond said first surface at the end of said panel, said end being comprised of planar portions arranged to form an L-shaped profile, said L-shaped profile including two portions perpendicular to said first and second surfaces and one portion parallel to said first and second surfaces;

a transverse threaded hole in said first surface of said second panel, said threaded hole extending between said second surface and said parallel portion of said second panel, said horizontal portions of said panels being overlapped and abutting, and said perpendicular portions abutting;

insulating material interposed between the first and second surfaces of each of said panels, said planar portions of said L-shaped profiles including surfaces of said insulating material;

a through bolt extended through said unthreaded hole and engaging said threaded hole, the head of said bolt being constrained from passing through said unthreaded hole,

whereby said panels are rigidly clamped together.

4,283,899

ANCHOR BOX EMBEDDED IN CONCRETE

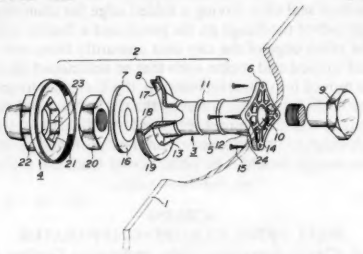
Masatoshi Wakamiya, Yokohama, Japan, assignor to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,308

Claims priority, application Japan, Nov. 22, 1978, 53-143545; Nov. 24, 1978, 53-160673

Int. Cl.³ E04B *1/41*

U.S. Cl. 52—699 **6 Claims**



1. An anchor box embedded in concrete comprising; a trunk body formed of plastic and defining a fastening bolt insertion hole, an anchor nut held through a metal washer by the rear portion of said trunk body and adapted to be threadedly engaged with said fastening bolt, a cap formed of plastic and adapted to be connected with said trunk body, said cap having a hole for holding said anchor nut against rotation and detachably threaded with said trunk bolt, and said washer being provided at its front side with a tapered surface.

4,283,900

CORNER BRACE FOR BUILDING CONSTRUCTION

Donald R. Schubert, Rte. 1, Box 124, Adkins, Tex. 78101

Filed Apr. 2, 1979, Ser. No. 26,423

Int. Cl.³ E04B *1/38*

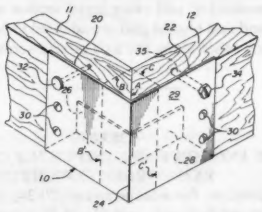
U.S. Cl. 52—712 **7 Claims**

1. A structural corner connection, comprising

an elongated barge rafter,

an elongated facia board the longitudinal axis of which is perpendicular to the longitudinal axis of said barge rafter, one end of said facia board abutting one end of said barge rafter,

a pair of metal channels each having a base and a pair of spaced parallel ascending side plates joined perpendicularly to form a right-angled corner brace having a straight rigid corner, one of said channels adapted for receiving and supporting said one end of said barge rafter in a first planar position, the other of said channels adapted for receiving and supporting said one end of said facia board in an abutting rigid right-angular relationship to said barge rafter in a second planar position perpendicular to said first planar position, the outer side plates of said corner brace channels ascending from said channel bases for contacting and covering substantially all of the outer planar surfaces of said barge rafter and facia board to protect the rafter and board surfaces from weathering,



said outer side plates having a plurality of spaced apertures disposed therein,

the inner side plates of said corner brace channels ascending from said channel bases for contacting at least a portion of the inner planar surfaces of said barge rafter and facia board and cooperating with said base and outer side plates to retain said barge rafter and facia board ends in an abutting right-angular relationship, and

fastening means cooperating with said apertures in said outer side plates and penetrating said ends of the barge rafter and facia board for securely joining the corner brace channels to said ends of said barge rafter and facia board.

4,283,901

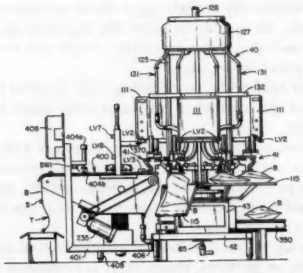
CONTINUOUS ROTARY MACHINE FOR UNCAPPING, FILLING AND RECAPPING FLEXIBLE BAGS HAVING SEPARABLE CAPS

Warren J. Schieser, Dublin, and Stanley E. Vickers, Hideaway Hills, both of Ohio, assignors to Liqui-Box Corporation, Columbus, Ohio

Filed Dec. 20, 1979, Ser. No. 105,624

Int. Cl.³ B65B *3/17, 3/30*

U.S. Cl. 53—75 **50 Claims**



1. A continuous rotary filling machine for receiving flexible bags with spouts having caps thereon that are removable by relative axial movement, which comprises: a rotatable filler head support, a plurality of filler heads angularly disposed about the support and each adapted to receive a capped

spouted bag, each filler head comprising means for removing and re-applying the cap on the spout and for filling the bag with a selected substance while the cap is removed, means for actuating each filler head during the continuous movement of the rotatable filler head support, said filler head actuating means including means for supplying a predetermined volume of flowable substance into the bag while the cap is removed, said substance-supplying means comprising a digitizing volume flow meter and a cooperating signal conditioner.

4,283,902

PROCESS AND APPARATUS FOR CONVERTING PILES OF FRESHLY PRINTED SHEETS OF BANK-NOTES INTO BUNDLES OF BANK-NOTES

Gualtiero Giori, Lonay, Switzerland, assignor to De la Rue Giori, S.A., Lausanne, Switzerland

Continuation of Ser. No. 868,747, Jan. 12, 1978, abandoned. This application Aug. 17, 1979, Ser. No. 67,549

Claims priority, application Switzerland, Jan. 19, 1977, 638/77

Int. Cl.[3] **B65B** *27/08, 13/02, 61/06*

U.S. Cl. 53—399 **17 Claims**

1. Apparatus for converting piles of freshly printed sheets of bank-notes, each sheet bearing a plurality of rows of bank-notes with a plurality of bank-notes in each row, into bundles of individual bank-notes with each bundle surrounded by a band, comprising:

first cutting means for making a plurality of parallel cuts across a pile of sheets of bank-notes to divide said pile of sheets into a plurality of bundle strips with each strip containing a plurality of bank-notes juxtaposed end-to-end,

banding means for applying to each of said bundle strips a plurality of bands equal in number to the number of bank-notes in each strip, said banding means comprising a plurality of banding units disposed side-by-side and equal in number to the number of bank-notes in each strip, said banding units being operated simultaneously and being positioned to apply a band at the location of each bank-note in a strip, and

second cutting means for cutting each of said bundle strips into bundles of individual bank-notes, each of said bundles being banded by a band applied by said banding means prior to the cutting of said bundle strips by said second cutting means.

4,283,903

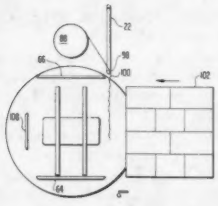
PACKAGE WRAPPING MACHINE

Riley H. Mayhall, 14130 Columbia Rd., Burtonsville, Md. 20730, and Andrew Zudal, 4140 Mt. Olney Ln., Olney, Md. 20832

Filed Nov. 21, 1978, Ser. No. 962,610

Int. Cl.[3] **B65B** *11/04*

U.S. Cl. 53—587 **14 Claims**



1. A stretch film package wrapping machine for wrapping package components in a plurality of self-adhering film layers comprising in combination:

a. A frame means;

b. A power driven rotary turret plate mounted on said frame means for rotation about a horizontal axis;

c. A loading and wrapping station including cantilevered article clamping means mounted on said turret plate for clamping and holding components during wrapping, wherein said clamping means includes first fixed and second movable clamp members having horizontal axes and clamp actuating means for effecting controlled relative movement of said clamp members toward each other to clamp package components positioned between said clamp members and for moving said clamp members to a position of maximum spacing to permit the insertion of said package components;

d. A control means for actuating said clamping means, rotating said turret plate more than one revolution to thereby wrap said package components, and for controlling all other required machine functions;

e. A means controlled by said control means for positioning a first loose portion of said web of stretch film at a first position in close proximity to said movable clamp member and in the path of said package components to be wrapped when inserted into the wrapping station between said clamp means, whereby said package components carry said loose portion of said film under said movable clamp member during insertion so that upon movement of said movable clamp member, said film is clamped between said movable member and the package components;

f. A means for moving said means for positioning a loose portion of said web after said clamping means is actuated to a second position which is away from said clamping means a sufficient distance that will permit said rotary member to rotate without hitting said means for positioning of said web during the wrapping of said packages and which provides separation of the last layer of said wrapped film from the wrapped package for severing of said web on completion of the wrapping operation;

g. A stretch film web feeding, tensioning and supply means mounted on said frame means for providing a web of film extending to said clamping means and package components held by said clamping means so that a plurality of rotations of said turret plate and said clamping means about said horizontal axis effects the wrapping of said clamping means and said package components;

h. A film cut-off means for severing the web of stretch film from the multi-layer wrapped package following the wrapping of the package and said clamp means; and

i. A package ejecting means for ejecting said multi-layer wrapped package from said clamping means at the completion of a cycle of operation.

4,283,904

GRASS FORAGE HARVESTER

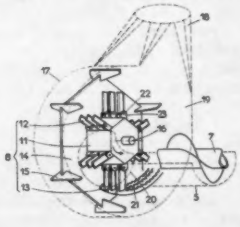
Jerome Aron, Dossenheim sur Zinsel, France, assignor to Kuhn, S.A., Saverne, France

Filed Jun. 4, 1979, Ser. No. 45,326

Claims priority, application France, Jun. 7, 1978, 78 17703

Int. Cl.[3] **A01D** *55/26, 55/00*

U.S. Cl. 56—13.9 **12 Claims**



1. A grass forage harvester comprising an element for mow-

ing or gathering grass, a cutter and projector device which comprises a rotor rotatable about a first axis with cutter blades articulated on its periphery and a disc carrying fan and projector vanes, said disc being mounted for rotation about a second axis parallel to said first axis such that said vanes move in a circular path surrounding said rotor with cutter blades, said vanes lying directly radially outwardly of said cutter blades and axially overlapping said cutter blades, and at least one counter-blade placed between the articulated cutter blades and the fan and projector vanes and retaining the grass until it is cut into small pieces.

4,283,905

MOWING MACHINE

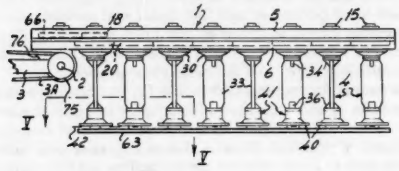
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Feb. 17, 1978, Ser. No. 878,913

Claims priority, application Netherlands, Feb. 17, 1977, 7701668

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—295 **13 Claims**



1. A mowing machine comprising at least two cutting members, bearing housings therefor, and bearings in said housings, drive means and a supporting element, said cutting members each being mounted on a respective said bearing housing for rotation about substantially vertical axes and rotated by drive means disposed above said cutting members, a frame beam disposed above said cutting members, a frame beam disposed above said cutting members, each said cutting member being supported at its lower region by said supporting element, said frame beam and said supporting element be connected only through said cutting members, said bearing housings each accommodating at least two said bearings for supporting the respective said cutting member, said bearing housings being mounted on said supporting element, each said cutter member including an annular collar surrounding said bearings at generally the same level as one of said bearings, a cutter and a pin for for supporting said cutter, in which said supporting element has an opening beneath each said cutting member in which said cutter is pivotally connected to each said cutting member by said pin provided therefor which can be passed downwardly through the corresponding said opening, a spring element locking said pin in place on said annular collar.

4,283,906

TOP DRIVEN SHAKER UNITS FOR HARVESTING MACHINE

Roy Scudder, Marden Tonbridge, England, assignor to FMC Corporation, San Jose, Calif.

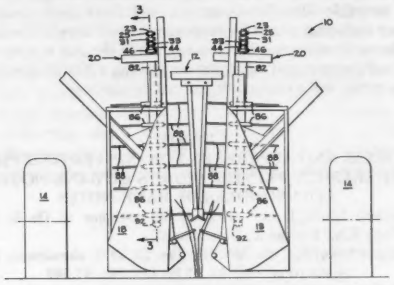
Filed Nov. 2, 1979, Ser. No. 90,815

Claims priority, application United Kingdom, Nov. 8, 1978, 43758/78

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **3 Claims**

1. A shaker assembly for use in a harvesting machine, said assembly comprising generally upright shaker shaft means, circumferentially spaced tines projecting radially from said shaker shaft means, means for circumferentially oscillating said shaker shaft means and said tines about the axis of the shaft means, means for unidirectionally rotating said shaker shaft means about its axis including a driven rotary member above the upper end of said shaker shaft means and means for driving said rotary member; the improvement comprising a rotationally elastic, elongate torsion bar concentric with the axis of said



shaker shaft means, means for connecting the upper end portion of said torsion bar to said driven rotary member and means for connecting the lower end portion of said torsion bar to said shaker shaft means.

4,283,907

DOUBLE TWIST SPINDLE INCLUDING A DRIVE WITHOUT CONTACT BETWEEN ITS PLATE AND ITS STABILIZER

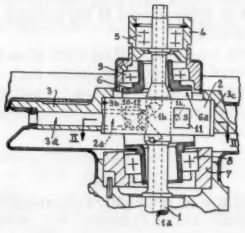
Marcel Pelin, La Mulatiere, France, assignor to Verdol S.A., Caluire, France

Filed Jan. 21, 1980, Ser. No. 113,872

Claims priority, application France, Jan. 26, 1979, 79 02587

Int. Cl.³ D01H *7/86*

U.S. Cl. 57—58.76 **7 Claims**



1. In a double-twist spindle of the kind including:
a central rotating shaft, said shaft having a first axis;
a bobbin-carrier rotatably supported by said shaft;
an elongated plate carried by said shaft to rotate therewith, said plate extending transversely of said shaft;
an annular disk fixed to the ends of said elongated plate, said disk having a central aperture;
a fixed ring surrounding said shaft on the other side of said elongated plate with respect to said bobbin-carrier;
a hollow stabilizer surrounding said shaft, said stabilizer having a second axis at an angle to said first axis, said stabilizer also having a first and a second end, and said stabilizer extending through the central aperture of said annular disk and being formed with a transverse aperture to accomodate said elongated plate;
means to mount the first end of said stabilizer in said bobbin-carrier to permit said stabilizer to rotate about said second axis;
means to mount the second end of said stabilizer in said ring to permit said stabilizer to rotate about its axis;
and means to angularly connect said elongated plate with

said stabilizer to cause positive rotation of said stabilizer about said second axis when said shaft rotates about said first axis;

said bobbin-carrier being thus retained against rotation by said stabilizer during rotation of said shaft;

the improvement in said last-named means which consists of means developing a remote action between said elongated plate and said stabilizer without any mechanical connection between them during normal operation of said spindle.

4,283,908

METHOD AND APPARATUS FOR PREPARING THE CHANGING OF COILS IN A RING SPINNING FRAME

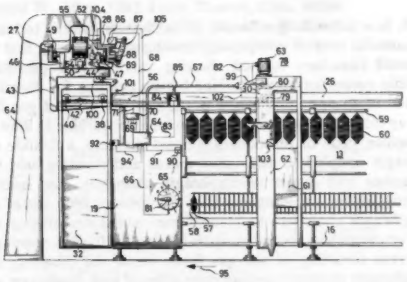
Heinz Kamp, Wegberg, and Joachim Rohner, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,021

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803930

Int. Cl.³ D01H *9/00, 9/08, 9/10*

U.S. Cl. 57—276 **9 Claims**



1. Method for preparing a ring spinning frame for automatic coil changing, which comprises issuing a command from a central automatic spinning control before the end of the spinning operation to at least one of a movable automatic servicing device for the spinning operation and a movable automatic servicing device for changing coils which has not yet reached the machine end of the ring spinning frame to move to the machine end, moving the at least one servicing device to the machine end, and connecting the servicing devices together at the machine end no later than the arrival of the at least one servicing device at the machine end, so that both mentioned servicing devices are placed in readiness at the machine end of the ring spinning frame when the spinning process is completed.

4,283,909

SPINDLE CLEANING APPARATUS

Alex J. Keller, Clover; Thad Flowers, Fort Mill, both of S.C.; Joseph R. Williams, Kings Mountain, N.C., and Navinchandra K. Patel, Houston, Tex., assignors to Automatic Material Handling, Inc., Bessemer City, N.C.

Continuation-in-part of Ser. No. 62,992, Aug. 2, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,333

Int. Cl.³ D01H *11/00*

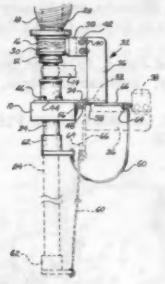
U.S. Cl. 57—306 **18 Claims**

1. Apparatus for cleaning underwound yarn wraps from a spindle mounted on the spindle rail of a spinning frame having a ring rail reciprocably movable along the axis of said spindle to build a yarn package on a bobbin carried by said spindle, said apparatus including:

(a) a supporting frame;

(b) at least one cleaning element mounted on said supporting frame to extend therefrom for selective cleaning engagement with said spindle; and

(c) mounting means associated with said supporting frame and adapted to connect said supporting frame to said



spindle rail for pivotal movement between a first position at which said cleaning element engages said spindle for cleaning thereof and a second position at which said supporting frame and said cleaning element are disposed beneath the lowest point of movement of said ring rail.

4,283,910

FUEL CONTROL SYSTEM

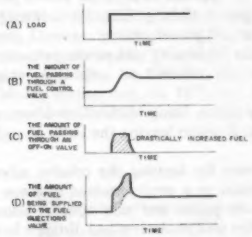
Toshimi Abo, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 4, 1980, Ser. No. 118,077

Claims priority, application Japan, Feb. 16, 1979, 54-16975

Int. Cl.³ F02C *9/32*

U.S. Cl. 60—39.28 R **6 Claims**



1. For a gas turbine comprising an output shaft and a fuel injection valve which is supplied with fuel from a fuel tank via a fuel supply passage, a fuel control system, comprising:

a load detector, which produces a first signal representative of the load on the turbine output shaft;

a rotational speed detector, which produces a second signal representative of the rotational speed of the turbine output shaft;

a main fuel control valve, located in the fuel supply passage;

an ON/OFF control valve, which is normally in the "OFF" state, and which bypasses the main fuel control valve and leads from the upstream to the downstream thereof; and

a control means which receives said second signal and controls the degree of opening of the main fuel control valve depending upon the difference between said second signal and a set reference value; characterized in that there is provided;

a holding means, which receives said first signal, and, when and only when its rate of increase is larger than a predetermined value, (a) opens the ON/OFF valve, and (b) interrupts the control of the main fuel control valve by the control means, maintaining the opening of the main con-

trol valve substantially at its value before said interruption.

4,283,911

BOOSTER

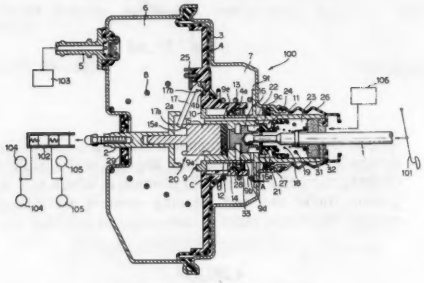
Akira Nakamura, Shizuoka, and Masato Oguri, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 6, 1979, Ser. No. 46,046

Claims priority, application Japan, Aug. 1, 1978, 53-106328[U]

Int. Cl.³ B60T *13/00*; F15B *9/10*

U.S. Cl. 60—547 R **10 Claims**



1. A booster for boosting an input force applied to an input member in order to output the same through an output member after having boosted by means of gaseous pressure comprising:

a power piston disposed in such manner as to divide a chamber inside an air-tight casing into two chambers and operated due to the pressure difference in the two chambers situated on opposite sides of the power piston;

a control piston slidably fitted in a through-bore axially formed in said power piston;

spring means for biasing said power piston and said control piston to be restored to respective original positions thereof;

said power piston being allowed to advance relatively to said control piston leaving the latter at said original position;

limiting means for limiting the relative advancing of said power piston to a predetermined distance so as to make said power piston and said control piston advance in unison after said predetermined distance has been reduced to zero;

a control valve disposed between said control piston and said input member, and operated by a relative movement between said control piston and said input member for controlling the pressure difference in the two chambers on opposite sides of said power piston;

an intermediate mechanism for transmitting a force imparted from said input member; and

a power lever, abutting at one end thereof on an output portion of said intermediate mechanism, abutting at the other end thereof on an output portion of said power piston, and abutting at the middle portion thereof on an input portion of said output member, for transmitting, while allowing relative movement between said intermediate mechanism and said power piston, the output from the former and the latter to said output member;

whereby when said input member is shifted by a slight stroke in the intial operation stage of said booster to actuate said control valve, said power piston is advanced in relation to said control piston, independent of the stroke amplitude of said input member, instantly by said predetermined distance, and after that said power piston is advanced together with said control piston.

4,283,912

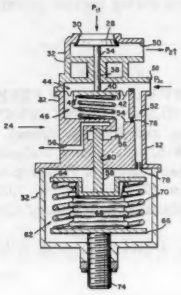
TURBOCHARGER CONTROL

Robert L. Cholvin, Santa Monica, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 12, 1979, Ser. No. 47,843

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—602 **6 Claims**



1. In a turbocharger having an exhaust gas driven turbine, a pneumatic control comprising housing means having first and second chambers formed therein; valve means positioned within means forming a turbine bypass opening for diverting, when in an open position, a portion of the exhaust gas flow away from driving communication with the turbine to limit the absolute value of turbocharger boost pressure; a flexible diaphragm coupled to said valve means and dividing said first chamber into a pair of diaphragm chambers, said housing means further including a vent port communicating one of said diaphragm chambers to atmosphere; means for biasing said valve means to a normal position closing the bypass opening to prevent diverting of the gas flow; means for coupling said diaphragm chambers on opposite sides of said diaphragm and said second chamber to boost pressure; a servo valve movable to open and close said vent port; and an evacuated spring-bellows assembly mounted within said second chamber and responsive to the absolute value of boost pressure for moving said servo valve to open said vent port when the absolute value of boost pressure exceeds a predetermined magnitude, resulting in a flow through said one of said diaphragm chambers to provide a pressure differential across said diaphragm to overcome said biasing means and to move said valve means to an open position.

4,283,913

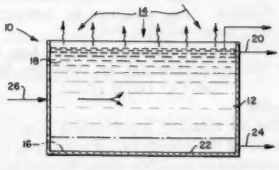
UTILIZATION OF SATURATED SOLAR PONDS

Sidney Loeb, Omer, Israel, assignor to Intertechnology/Solar Corporation, Warrenton, Va.

Filed Dec. 12, 1978, Ser. No. 968,792

Int. Cl.³ F03G *7/06*

U.S. Cl. 60—641 A **16 Claims**



3. A system to generate electric power from solar energy comprising in combination:

(a) a saturated solar pond, containing a saturated solution of

a brine, said solution and pond arranged to receive solar radiation to unmix said saturated solution continuously varying from a higher, cooler, dilute solution to a lower, hotter, concentrated solution;

(b) an energy conversion device having at least a first and second chamber, said first chamber connected to said dilute solution and said second chamber connected to said concentrated solution;

(c) said first and second chambers separated by two membranes, said first membrane occupying a first portion of the space separating said chambers, said second membrane occupying the remaining portion of the space separating said chambers;

(d) said first membrane selectively permeable to anions and said second membrane selectively permeable to cations, whereby the anions and the cations in the concentrated brine chamber permeate to the dilute brine chamber creating an electrical potential;

(e) means responsive to said generated electrical potential to generate electric power;

(f) Means to return said altered solutions to said saturated solar pond for unmixing.

4,283,914

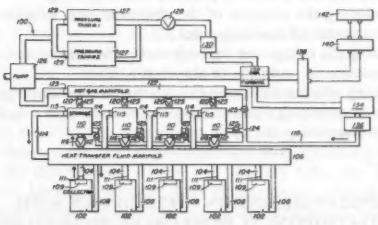
SOLAR ENERGY SYSTEM

Leonard W. Allen, 1342 Vrain, Denver, Colo. 80204

Filed Apr. 17, 1979, Ser. No. 31,015

Int. Cl.³ F03G 7/02

U.S. Cl. 60—641 AC **7 Claims**



1. A solar electrical generating system comprising:

(a) a collector having a solar heat gathering element;

(b) a plurality of heat storage containers containing a storage media;

(c) a heat transfer fluid manifold;

(d) means for circulating a heat transfer fluid between said collector heat gathering element and said heat transfer fluid manifold;

(e) means for circulating a heat transfer fluid between the heat transfer fluid manifold and each of said heat storage containers;

(f) a hot gas manifold;

(g) means for circulating an operating fluid from each heat storage container to the hot gas manifold;

(h) means for returning operating fluid from the hot gas manifold directly to a heat storage container; and

(i) a closed cycle electrical generating apparatus receiving operating fluid from the hot gas manifold and returning the fluid to a heat storage container.

4,283,915

HYDRAULIC FLUID GENERATOR

David P. McConnell, P.O. Box 591, Minden, Nev. 89423, and Louis E. Tully, LaCanada, Calif., assignors to David P. McConnell, Fallon, Nev.

Filed Apr. 14, 1976, Ser. No. 677,041

Int. Cl.³ F03G 7/06

U.S. Cl. 60—650 **34 Claims**

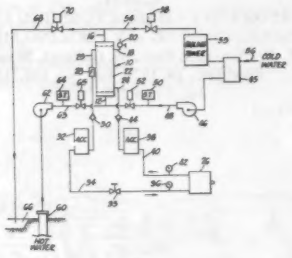
1. In a hydraulic fluid generator for utilizing the heat energy of a source of relatively warm water to produce a high pressure hydraulic output, the combination of:

a working liquid having a relatively high coefficient of thermal expansion;

a heat exchanger providing a heat exchange zone;

passage means for the working liquid through the heat exchanger and through the heat exchange zone therein;

means to circulate a relatively cold fluid through the heat exchanger to cool the working liquid in said passage means with consequent contraction of the volume of the working liquid in the passage means;



alternate means to circulate the relatively warm liquid from said source through the heat exchange zone for heating the working liquid in said passage means with consequent expansion in volume of the working liquid; and

means to prevent reverse flow of the working liquid through the passage means, thereby to cause the alternate contraction and expansion of the working liquid to create a high pressure hydraulic output of the working liquid from the passage means.

4,283,916

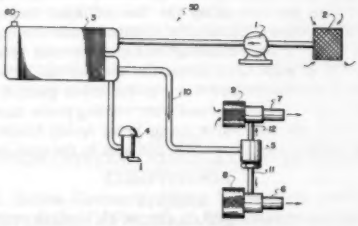
THERMAL EXCHANGE SYSTEM AND APPARATUS

Armando Bassotti, Caracas, Venezuela, assignor to Fabrica de Aparatos de Aire Acondicionado, Venezuela

Continuation-in-part of Ser. No. 932,601, Aug. 10, 1978, abandoned. This application Aug. 22, 1979, Ser. No. 68,669

Int. Cl.³ F25B 9/02

U.S. Cl. 62—5 **6 Claims**



1. A heat exchanger system comprising, a compressor having an input for receiving a pressurizable medium and an output, a static turbulence generator having an input connected to said compressor output, a first output for warmed medium and a second output for cooled medium, said static turbulence generator receiving pressurized medium from said compressor and converting the pressure thereof into kinetic energy in the medium in the form of increased velocity thereof in said first output, an inductor having a first input connected to said first static turbulence generator output, a second input for receiving additional pressurizable medium and an output with a calibrated duct in said inductor for inducing additional medium into said second input and out of said inductor through said

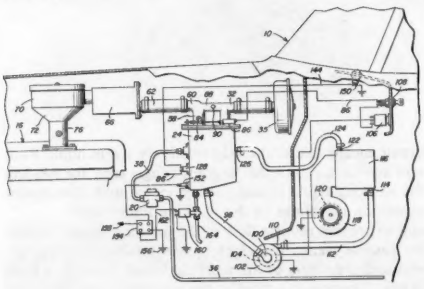
inductor output, and a control valve connected to said second static turbulence generator output for regulating the flow of medium to said inductor, said inductor comprises a drum member, means in said drum member defining said calibrated duct between said first inductor input and said second inductor input whereby the additional medium is mixed with the medium for said first input and means downstream of said calibrated duct defining a diverging duct, said calibrated duct having an annular chamber communicating with said first static turbulence generator output and said drum mouth end in said calibrated duct upstream of said diverging duct.

4,283,917

EVAPORATIVE CHARGE FORMING SYSTEM INCORPORATING AIR COOLING MEANS

Charles L. Proffer, P.O. Box 206, Gulfport, Miss. 39501

Filed Dec. 20, 1979, Ser. No. 105,715
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—7 **9 Claims**



1. A charge forming system including a closed chamber, an evaporative liquid fuel supply means for maintaining a predetermined general level of liquid fuel in said chamber, said chamber including an engine induction air inlet opening thereinto below said level and an induction air outlet opening outwardly of said chamber from a level above said liquid level, duct means including an inlet portion communicated with said outlet and an outlet end for communication with the induction passages of a combustion engine, water drain means opening outwardly from a lower portion of said chamber, electrically operated valve means operatively connected with said water drain means for controlling the flow of liquid through said water drain means, electrically actuated water sensing probe means in the lower portion of said chamber and electrically connected to said valve means for opening the latter in response to a collection of water in the lower portion of said chamber up to the level of said water sensing probe means, said electrically operated valve means being spring biased to the closed position and electrically operable to the open position.

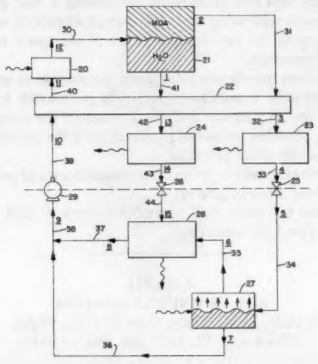
4,283,918

LIQUID PHASE SEPARATION IN ABSORPTION REFRIGERATION

Gurmukh D. Mehta, Warrenton, Va., assignor to Intertechnology/Solar Corporation, Warrenton, Va.

Filed Jul. 20, 1979, Ser. No. 59,387
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—112 **1 Claim**

1. The method of cooling which comprises,
(a) selecting a binary solution of absorbent and refrigerant liquids which are completely miscible below a certain temperature and only partly miscible above said temperature,
(b) increasing the pressure of said binary solution to prevent vaporization of said liquids during the heating and separating steps,
(c) heating said binary mixture, by means of a heat source, to a temperature above that of complete miscibility,
(d) separating the refrigerant-rich liquid solution and absorbent-rich liquid solution thus formed,
(e) separately cooling each solution by a heat sink,
(f) reducing the pressure of said refrigerant-rich solution, thereby reducing the temperature of the solution due to partial evaporation,



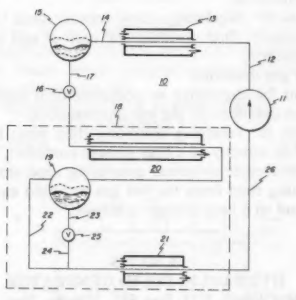
(g) further evaporating part of the refrigerant-rich solution by absorption of heat to produce useful cooling,
(h) reducing the pressure of the absorbent-rich solution to the pressure of the evaporator,
(i) mixing the refrigerant vapor from the evaporator and the absorbent-rich solution to absorb the vapor,
(j) mixing solution from step (i) with the unevaporated solution from step (g), pressurizing the mixture as in step (b), thus completing the cycle.

4,283,919

VAPOR COMPRESSION CYCLE DEVICE WITH MULTI-COMPONENT WORKING FLUID MIXTURE AND METHOD OF MODULATING THE THERMAL TRANSFER CAPACITY THEREOF

Himanshu B. Vakil, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,971
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—114 **18 Claims**



1. A method of modulating the thermal transfer capacity and the evaporator superheat of a vapor compression cycle device which includes compressing a multi-component working fluid mixture, comprising at least two miscible refrigerants having different boiling points condensing a vapor portion of the

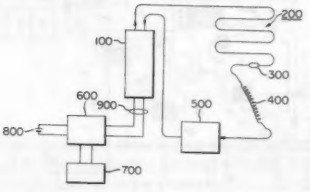
mixture, storing a liquid portion of the mixture under high pressure, controlling the flow rate of the mixture from high pressure storage, evaporating a portion of the mixture liquid flowing from storage, storing the remaining unevaporated mixture under low pressure, combining at least a portion of the evaporated mixture and a controlled amount of the stored unevaporated mixture portion, evaporating the combined mixture, and controlling the flow rate of compression by the density of the working fluid mixture entering therein.

4,283,920

REFRIGERATING DEVICE

Hiroyuki Kainuma, Kumagaya; Yukio Okuda, Fukaya, and Yoshiaki Fujisawa, Gyoda, all of Japan, assignors to Sawafuji Electric Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1979, Ser. No. 51,829
Claims priority, application Japan, Jul. 28, 1978, 53/92209
Int. Cl.³ F25B *31/02;* F04B *49/10*
U.S. Cl. 62—126 **7 Claims**



1. A refrigerating device having an inverter circuit for generating an alternating voltage, a phase control circuit for controlling the switching phase in the inverter circuit, a vibrator compressor to which the alternating voltage from the inverter circuit is supplied, a condenser to which the refrigerant is fed from the vibrating compressor, a capillary tube provided on the downstream side of the condenser, an evaporator provided on the downstream side of the capillary tube, the inverter circuit having at least one main semiconductor element with a control portion and constructed so as to change the oscillation frequency of the alternating voltage in accordance with changes in the natural oscillation frequency of a mechanical system of the compressor, the phase control circuit having at least one of an ambient temperature sensor and an evaporator temperature sensor, wherein the phase control circuit supplies a control signal for the inverter circuit for controlling the phase of the alternating voltage supplied to the vibrating compressor in accordance with at least one of the ambient temperature and the evaporator temperature so as to lower the compression level of the refrigerant by reducing the piston stroke of the vibrating compressor in accordance with changes in at least one of the ambient temperature and the evaporator temperature.

4,283,921

CONTROL AND ALARM SYSTEM FOR FREEZER CASE TEMPERATURE

Howard S. Prosky, Englewood, Colo., assignor to Electromedics, Inc., Englewood, Colo.

Filed Apr. 25, 1980, Ser. No. 143,931
Int. Cl.³ F25B *49/00;* G05B *15/00, 23/00*
U.S. Cl. 62—126 **9 Claims**

1. A temperature control system for a refrigeration compartment, for use with a refrigeration system operatively controlling the temperature of said compartment, said refrigeration system including a refrigeration control means for operatively controlling the thermal effect of said refrigeration system within said compartment, said temperature control system comprising:

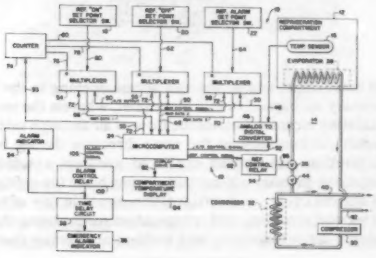
sensor means thermally coupled with said compartment for sensing the actual temperature within said compartment and for creating an electrical characteristic signal related to the actual temperature sensed;

converter means electrically connected with said sensor means, said converter means operatively converting the electrical characteristic signal of said sensor means into a compartment temperature signal;

first temperature selector means for selectively establishing a first limit signal representative of an upper limit temperature of a range of desired temperatures within which the temperature of said compartment is normally to be regulated;

second temperature selector means for selectively establishing a second limit signal representative of a lower limit temperature of the range of desired temperatures within which the temperature of said compartment is normally to be regulated;

first multiplexer means operatively connected to receive the compartment temperature signal and the first limit signal



from said converter means and said first temperature selector means, respectively, and operative to supply both the compartment temperature and first limit signals when enabled;

second multiplexer means operatively connected to receive the compartment temperature signal and the second limit signal from said converter means and said second temperature selector means, respectively, and operative to supply both the compartment temperature and second limit signals when enabled;

enabling means operatively connected with said first and second multiplexer means for enabling said first and second multiplexer means in sequence; and

computer means operatively connected to receive the signals from said first and second multiplexer means, said computer means operatively controlling said refrigeration control means of said refrigeration system in a manner predetermined by the relation of the compartment temperature signal to the first and second limit signals.

4,283,922

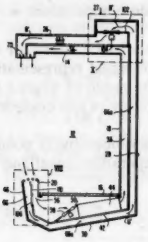
AIR DEFROST SYSTEM USING SECONDARY AIR BAND COMPONENTS

Elmer J. Subera, Cassopolis; Melvin W. Steelman, and Fayez Abraham, both of Niles, all of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Division of Ser. No. 928,313, Jul. 26, 1978, Pat. No. 4,207,747, which is a division of Ser. No. 790,654, Apr. 25, 1977, Pat. No. 4,144,720. This application Sep. 17, 1979, Ser. No. 76,226
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—256 **12 Claims**

1. A refrigerated display cabinet having: an access opening for communicating a storage and display space within the cabinet with the ambient atomsphere; adjacent inner and outer outlets extending across one edge of said access opening; corresponding adjacent inner and outer inlets extending across an opposite edge of said access opening; a first conduit extending from said outer inlet around said cabinet to said outer outlet; a

second conduit extending from said inner inlet around said cabinet to said inner outlet; first air circulating means for propelling air through said first conduit in a first direction during the refrigeration cycle and in a second direction, substantially opposite said first direction, during the defrost cycle, whereby during the defrost cycle ambient air is selectively drawn into said first conduit through said outer outlet; second air circulating means for propelling air through said second conduit to



said inner outlet and across said access opening in the form of a primary air curtain to said inner inlet; wherein the second air circulating means maintains the flow of air through said second conduit continuously in the same direction during both the refrigeration and defrost cycles to maintain a substantially continuous primary air curtain during both the refrigeration and defrost cycles; and refrigeration means in one of said first and second conduits, said refrigeration means being defrosted during a defrost cycle by said ambient air passing thereover.

4,283,923

METHOD OF CONTINUOUS FREEZING OF FOOD PRODUCTS IN BULK, ESPECIALLY OF FRUITS AND VEGETABLES, AND AN APPARATUS FOR APPLICATION OF THE METHOD

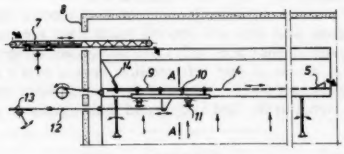
Zbigniew Gruda, Al. Niepodległości 159/69, and Wieslaw Kurzeba, ul. Gorlicka 11/40, both of Warszawa, Poland

Filed Jul. 17, 1979, Ser. No. 58,343

Claims priority, application Poland, Aug. 22, 1978, 209192

Int. Cl.³ F28G *1/00*

U.S. Cl. 62—303 **4 Claims**



1. An apparatus for continuous freezing of food products in bulk, comprising an insulated housing, a series of cooling units within said housing in side-by-side relationship, each of said cooling units including an air cooler and means for causing an upward flow of air from said air coolers, a longitudinally extending foraminous surface spaced above at least the first cooling unit such that in operation of the apparatus a fluidized bed of the food product is formed above said foraminous surface, and means for feeding the unfrozen food product to said fluidized bed, the improvement wherein said feed means comprises a belt conveyor which extends within said housing above said foraminous surface, said belt conveyor being disposed substantially parallel to said foraminous surface, said belt conveyor being slidably mounted for to-and-fro motion along the axis of said foraminous surface, and means for imparting said to-and-fro motion to said belt conveyor, and wherein at least the front part of the bottom of the foraminous surface is in the form of a grate made of wire, and a series of cleaning combs are provided beneath said grate, the teeth of said combs being adapted to enter the spaces between the wires of the grate, and means are provided for shifting of the cleaning combs to-and-fro along the axis of the foraminous surface.

4,283,924

CLIMATIZING OF AIRCRAFT

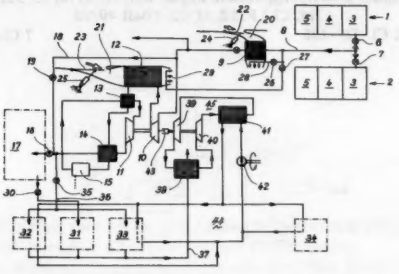
Horst Schütze, Weyhe, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremem, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,075

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834256

Int. Cl.³ F25D *9/00*

U.S. Cl. 62—402 **6 Claims**



1. In a system for climatizing and air conditioning interior compartments of an aircraft, including the passenger cabin, under utilization of air tapped from a compressor of an engine of the aircraft, the system including a cooling turbine for driving a compressor for the tapped air, the turbine cooling this tapped air as compressed by the compressor prior to discharge into the passenger cabin, the improvement comprising:

a second compressor connected to be driven by said first turbine and having an input and discharge output;

a closed cooling loop which includes (i) said second compressor, (ii) a second turbine for cooling and compressing fluid in the closed loop, (iii) a first heat exchanger connected between the discharge output of the second compressor for compressed fluid and an input for the second turbine for passing thereto fluid cooled by the first heat exchanger, and (iv) a second heat exchanger connected between a discharge output of the second turbine after expanding work and said input of the second compressor;

means for feeding air discharged from the cabin to the first heat exchanger, for precooling the fluid as it flows from the second compressor to the second turbine; and

a second loop for cooling other compartments and being connected for being cooled by the second heat exchanger and by the fluid as it flows through the second heat exchanger from the second turbine to the second compressor.

4,283,925

SYSTEM FOR COOLING

Robert Wildfeuer, 85 Floral Dr., W. Plainview, N.Y. 11803

Filed Nov. 15, 1979, Ser. No. 94,743

Int. Cl.³ F25D *43/02*

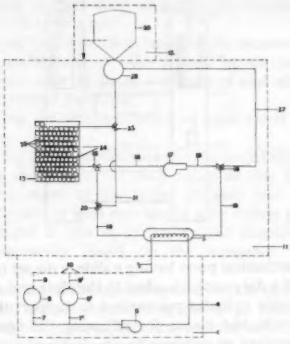
U.S. Cl. 62—434 **12 Claims**

1. In a system for cooling an enclosure having a cooling load comprising:

(a) A cooling zone containing a conduit in said enclosure for cooling fluid, said conduit encountering said load, means in said conduit for propelling said cooling fluid through said conduit and cooling fluid within said conduit;

(b) A refrigeration zone containing a closed refrigeration circuit for refrigerant, chiller means in said circuit for extracting energy from said refrigerant, means in said circuit for circulating said refrigerant and refrigerant within said circuit; and

(c) Collection means connected to said refrigerant zone for removing energy extracted by said chiller means; said refrigeration and cooling zones being connectable by an



exchanger means for transferring energy from said cooling fluid to said refrigerant; the improvement wherein said refrigerant circuit includes a reservoir for said refrigerant, which reservoir contains capsules of an energy storage medium enveloped within an impermeable membrane, said medium having a liquid/solid phase transformation point at a temperature between the minimum and maximum operation temperatures of said refrigerant.

4,283,926

CONTROL DEVICE FOR FLAT KNITTING MACHINES HAVING CIRCULATING KNIT CARRIAGES

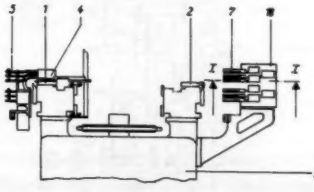
Eberhard Grimmer; Günther Kessler, and Hartwig Müller, all of Karl-Marx-Stadt, German Democratic Rep., assignors to Veb Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Feb. 11, 1980, Ser. No. 120,855

Claims priority, application German Democratic Rep., Feb. 13, 1979, 211002

Int. Cl.³ D04B *7/00, 15/66*

U.S. Cl. 66—75.2 **14 Claims**



1. A control device for flat knitting machines of the type having at least two pairs of consecutively arranged needle beds and a plurality of knit carriages circulated in one direction above the needle beds and each supporting adjustable control bars, and stationary control plates arranged between the respective pairs of needle beds to cooperate with the assigned control bars, comprising: a plurality of parallel control tracks provided on each of said control plates to guide the assigned control bars; a plurality of movable switching guides arranged on each control plate for directing said control bars into preselected tracks; and means for activating said switching guides according to the movement of said control bars.

4,283,927

HAND-OPERATED KNITTING MACHINE WITH LOOP TRANSFER FUNCTIONS

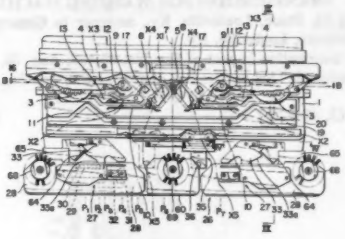
Nobuaki Yokoyama, Kodaira, Japan, assignor to Silver Seiko, Ltd., Kodaira, Japan

Filed Sep. 28, 1979, Ser. No. 80,149

Claims priority, application Japan, Oct. 17, 1978, 53-126854

Int. Cl.³ D04B *7/00, 15/36, 35/00*

U.S. Cl. 66—78 **8 Claims**



1. In a hand-operated knitting machine of the type having a single flat needle bed including a plurality of knitting needles tricked for individual movement therein and a carriage mounted for sliding movement on the needle bed, each of the knitting needles having a butt thereon, the improvement comprising:

a pair of loop transfer devices located on said carriage in a symmetrical relationship with each other relative to the transverse center line of said carriage and cooperable with a given set of paired needles at the forward end portions thereof to transfer a particular needle loop from one to the other of the paired needles;

a yarn feeder mounted on said carriage and having an eye for feeding therethrough a knitting yarn onto said needles; and

a cam arrangement mounted on said carriage for engagement with the butts of said needles to actuate said needles and having a generally symmetrical construction relative to said center line, said cam arrangement including a pair of needle selector members each located adjacent to an end portion of said carriage, a pair of cam member sets each located inwardly of an associated needle selector member in opposing relationship to an associated loop transfer device and each defining first and second loop transfer butt-paths for actuating, respectively, the needles selected by said needle selector members and the unselected remaining needles to bring the selected needles, as transferring needles and those of the unselected needles which are paired with the selected needles, as receiving needles, into operative engagement with said loop transfer devices to effect transfer of the particular needle loops from said selected transferring needle said unselected, paired, receiving needle of each needle pair, a center raising cam having a pair of cam profiles each defining part of a raising butt-path for raising both the selected and unselected needles to their clearing position, the raising butt-paths being contiguous to the respective first and second loop transfer butt-paths defined by the respective cam sets and intersecting each other at a point adjacent the forward angular end of the center raising cam, each set of said cams defining the remaining part of the corresponding raising butt-path, and a part of a lowering butt-path for lowering said needles from the clearing position to beyond the knock-over position, the lowering butt-path being contiguous to its respective raising butt-path, a knitting yarn being fed to the knitting needles while the needles are

being lowered along said lowering butt-paths so as to be knit into needle loops by said needles, and a pair of knitting cams each located rearwardly of said first and second loop transfer butt-paths defined by the associated cam member sets for intersecting, in a first direction of movement of said carriage, one of said lowering butt-paths for the other direction of movement whereas said first and second butt-paths for the other direction of movement intersect the other lowering butt-path for said first direction of movement.

4,283,928

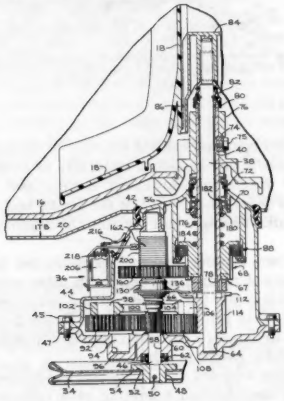
TRANSMISSION FOR WASHING MACHINE

Aidan M. Stone, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation-in-part of Ser. No. 69,487, Aug. 24, 1979, abandoned. This application Jun. 19, 1980, Ser. No. 161,103

Int. Cl.³ D06F *23/04, 37/40*

U.S. Cl. 68—23.7 **18 Claims**



1. A washing machine transmission for selectively providing oscillatory drive to an agitator and rotary drive to a clothes receiving receptacle, said transmission comprising:

a transmission housing;

a spin tube rotatably mounted in said housing and extending therefrom for driving connection to a clothes receptacle;

an agitator drive shaft rotatably mounted in said housing and extending therefrom through said spin tube for driving connection to an agitator;

an input shaft rotatably mounted in said housing in spaced relationship to said spin tube and drive shaft, said input shaft extending from said housing for rotation selectively in either of a first and a second direction;

oscillation mechanism operatively connected to said input shaft and including an agitator drive element caused to oscillate in response to rotation of said input shaft;

means for drivingly connecting said agitator drive element to said agitator drive shaft for oscillating said drive shaft when said input shaft rotates in the first direction and for disconnecting said agitator drive element from said agitator drive shaft when said input shaft rotates in the second direction;

spin drive means for drivingly connecting said input shaft with said spin tube, said spin drive means including clutch means operatively connected to said input shaft and normally effective to slip when said input shaft rotated in the first direction and to complete the driving connection from said input shaft to said spin drive means when said input shaft rotates in the second direction.

4,283,929

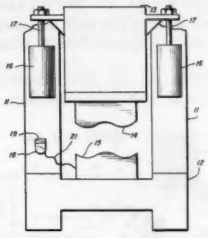
CODED AUTOMATIC COUNTERBALANCE CONTROL

Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Jul. 16, 1979, Ser. No. 57,979

Int. Cl.³ B21J *9/20*

U.S. Cl. 72—7 **5 Claims**



1. In a mechanical press having a slide, a die set including the elements of a die punch attached to the slide and a die shoe, a counterbalance cylinder pressurized to support the slide and the die punch, and means for adjusting the counterbalance cylinder pressure in response to an electrical signal, the improvement comprising:

a plug attached to an element of the die set, the plug having a portion bearing a readable digital code indicative of the weight of the die punch in the die set, the readable digital code borne by the plug being of a selected parity, including a parity bit if necessary; and

means for converting said readable digital code on the plug to an electrical signal dependent upon said code, said electrical signal being utilized by the adjusting means for the counterbalance cylinder.

4,283,930

ROLLER-DIES-PROCESSING METHOD AND APPARATUS

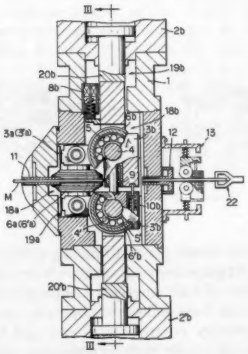
Yoshimichi Hasegawa, Nagoya; Osamu Furuta, Tokai; Jouji Shinta, Tokai, and Hideo Nakamura, Tokai, all of Japan, assignors to Aichi Steel Works Limited, Aichi, Japan

Filed Dec. 8, 1978, Ser. No. 967,695

Claims priority, application Japan, Dec. 28, 1977, 52-158482; Jan. 30, 1978, 53-9129

Int. Cl.³ B21B *37/08, 37/14*

U.S. Cl. 72—8 **20 Claims**



1. A method for manufacturing taper bars desiredly tapered at least in two directions by drawing using a multi-tandem type roller dies means comprising at least two successively arranged

sets of idler rollers in different phase angle, each of said roller sets comprising a plurality of mutually approachable and departable rollers which are provided with a respective circumferential groove having a constant sectional configuration and constant dimension throughout the whole length thereof, said method comprising the following steps:

(a) pulling a deformable blank through the roller sets at a temperature not exceeding 800° C.;

(b) measuring the travelling amount in the longitudinal direction of the taper bar;

(c) generating by a controller, based on the measured travelling amount and a taper value pre-set, signals respectively representing a target distance of each of said rollers from a predetermined level line;

(d) measuring the actual distance of each roller from the level line;

(e) comparing the target distance and the actual distance and adjusting the position of each roller so that the actual distance is equal to the target distance and all passes formed by said at least two sets of idler rollers are gradually changed in size in an interrelated manner to each other commonly based on the measured travelling amount;

(f) the measuring of the travelling amount, the generation of the output signals representing the targe distances, the measuring of the actual distances and the adjusting of the roller positions being performed while drawing is in progress; and

(g) the adjusting of the rollers of the plural roller sets being performed so that the passing line of the blank is maintained constant.

4,283,931

CONTINUOUS EXTRUSION OF METALS

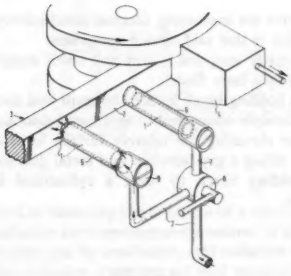
Stanley W. Pigott, Haywards Heath, and Peter Gregory, Great Missenden, both of England, assignors to BICC Limited, London, England

Filed Jul. 30, 1979, Ser. No. 61,995

Claims priority, application United Kingdom, Oct. 27, 1978, 42280/78; Jun. 14, 1979, 20813/79

Int. Cl.³ B21C *23/32*

U.S. Cl. 72—45 **3 Claims**



1. A process for continuous friction-effected extrusion of rod feedstock in which rod feedstock is gripped in a channel formed between one moving surface defined by the walls of a groove in a rotatable wheel and a stationary shoe closing part of the circumference of the groove and having a stop at the end towards which the moving surface travels, to advance the feedstock towards the stop and so develop a pressure in the feedstock greater than the yield strength of the material from which it is made so that it upsets against the stop and flows out through a die forming an orifice that extends through the stationary shoe at the closed end of the channel, and in which lubricant is applied selectively to a side of the feedstock that will contact the stationary shoe by supporting a stick of the lubricant in a cylinder having an open end facing the said side of the feedstock that will contact the shoe, in which cylinder the stick is a loose fit and introducing compressed gas into the cylinder to apply a substantially constant biasing force urging the stick into engagement with the said side and at the same time to cool the stick of lubricant to inhibit melting.

4,283,932

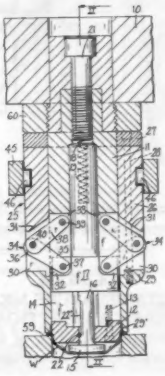
TOGGLE-ACTUATED PUNCH STRIPPER

Anthony M. Putetti, Waterbury, Conn., assignor to Textron, Inc., Cheshire, Conn.

Filed May 31, 1979, Ser. No. 44,015

Int. Cl.³ B21D *45/00*

U.S. Cl. 72—345 **8 Claims**



1. A workpiece releasing mechanism in a forming press having a frame, a punch, a die and means for reciprocating the punch toward and away from the die, said mechanism comprising a punch shoe movable axially relative to the end of the punch, a stripper sleeve slidable longitudinally on the punch, a toggle linkage between the punch and the shoe, means on the sleeve for actuating the toggle linkage in the elongation mode, and means for moving the sleeve axially of the punch as a function of the changing position of the punch relative to the die.

4,283,933

GRIPPING OR PRESSING TOOL

Hans Wiener, Täby, Sweden, assignor to Pressmaster A.B., Stockholm, Sweden

Continuation-in-part of Ser. No. 852,724, Nov. 18, 1977, Pat. No. 4,199,972, which is a continuation-in-part of Ser. No. 647,641, Jan. 8, 1976, Pat. No. 4,078,303. This application Oct. 4, 1979, Ser. No. 81,932

Int. Cl.³ B21D *37/12*

U.S. Cl. 72—409 **7 Claims**

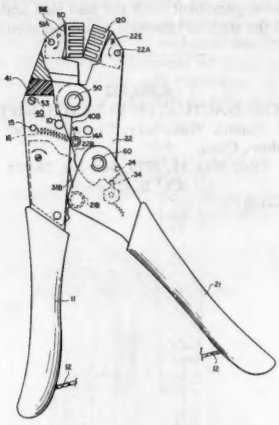
1. A tool for handling workpieces of generally circular cross-section, comprising:

a first jaw and a second jaw each having a base and workpiece-gripping webs with parallel major faces rising from said base;

operating means including a pair of pivotally interconnected shanks enabling relative swinging of said jaws in a plane transverse to the pivotal axis of said shanks between a withdrawn position allowing insertion of a workpiece between said jaws and a working position in which the webs of said jaws are mutually interleaved, said jaws being swingably mounted on said shanks with swing axes parallel to said pivotal axis and to said major faces; and

swing-limiting means operatively coupled with said jaws in

said withdrawn position for aligning the webs of each jaw with respective gaps between the webs of the other jaw



interengagement of said jaws with their webs interleaved upon displacement into said working position.

4,283,934

PYROMETRIC TEMPERATURE MEASUREMENTS IN FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

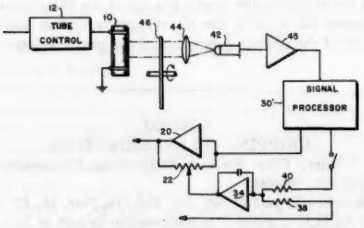
Gerhard Siess, Owingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer, Uberlingen, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,247

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903328

Int. Cl.³ G01K *15/00*; G01J *5/08*

U.S. Cl. 73—1 F **5 Claims**



1. Circuitry for automatically adjusting the calibration of a first pyrometric radiation detector for extended temperature range measurements of a heated atomic absorption spectroscope graphite tube independently of the radiation emission factor of said tube, said first radiation detector being positioned to receive radiation from said tube and generating an output signal indicative of the temperature thereof, said circuit including:

a variable gain amplifier coupled to said radiation detector and responsive to the signal generated therefrom;

a second radiation detector positioned to sense the radiation emitted by said graphite tube, said second detector being accurate within a limited wavelength range and generating a second output signal that is independent of the emission factor of said graphite tube; and

circuitry means responsive to said second output signal for adjusting the gain of said variable gain amplifier whereby the output signal of said amplifier represents the temperature sensed by said first radiation detector corrected for emission factor;

the improvement comprising:

said second radiation detector being sensitive to a limited radiation wavelength range, the center of which is a short-wave with respect to a radiation emitted by said graphite tube, said second detector including said first radiation detector and a short wavelength transmitting filter interposable in the radiation beam from said graphite tube.

4,283,935

DEVICE FOR MEASURING THERMAL CONDUCTIVITY OF LIQUID

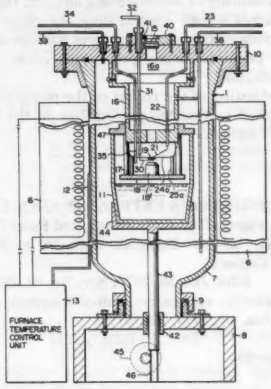
Wataru Eguchi, Kyoto; Makoto Harada, Otsu; Masataka Tanigaki, and Yutaka Tada, both of Kyoto, all of Japan, assignors to President of Kyoto University, Tokyo, Japan

Filed Dec. 13, 1979, Ser. No. 103,228

Claims priority, application Japan, Mar. 19, 1979, 54-31911

Int. Cl.³ G01N *25/18*

U.S. Cl. 73—15 A **16 Claims**



1. A device for measuring thermal conductivity of liquids, characterized in that said device comprises:

a horizontally supported, thin and small metal disc to be heated by a laser flash;

a sample holding block located beneath said metal disc;

a thermocouple connected to said metal disc; and

means for elevating the relative surface level of a sample liquid, filling a gap between said metal disc and said sample holding block to form a cylindrical liquid layer therein.

4,283,936

VIBRATION DENSITOMETER ASSEMBLY

Milton H. November, Hacienda Heights, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

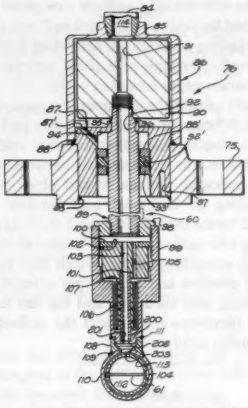
Filed Mar. 17, 1980, Ser. No. 131,387

Int. Cl.³ G01N *9/00*

U.S. Cl. 73—32 A **2 Claims**

1. A vibration densitometer assembly comprising: an annular support having a web fixed thereto partly covering a bore and defining a central hole; a vibration densitometer probe having a cylinder sealed to said web through said hole, said cylinder extending into said bore; an annular packing positioned around said cylinder axially spaced from said web, but radially compressed against said cylinder, said packing being squeezed between said bore and said cylinder to hold said cylinder in a

bracing position, said packing, said bore, said cylinder and said web defining an annular space, said annular support having a



vent hole therethrough extending from said annular space to a point exterior of said annular support.

4,283,937

METHOD OF DETECTING BROKEN WINDOW FOIL OF APPARATUS FOR TREATING WASTE GAS WITH IRRADIATION

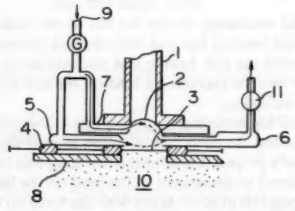
Shinji Aoki, Tokyo; Keita Kawamura, Fujisawa; Tsutomu Higo, Chigasaki; Hitoshi Kimura, Fujisawa; Yasuhiro Sawada, Fuchu; Tsutomu Katayama, and Katsumi Kengaku, both of Kitakyushu, all of Japan, assignors to Ebara Corp. and Shin Nippon Seitetsu Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,419

Claims priority, application Japan, Dec. 29, 1978, 53-162154

Int. Cl.³ G01M *3/32*

U.S. Cl. 73—49.3 **11 Claims**



1. A method of detecting the breakage of a window-foil that closes the radiation inlet opening of the reactor of an apparatus for treating waste gas by irradiation, said radiation being emitted from the radiation generator of said apparatus through another window-foil that closes the radiation outlet opening of the radiation generator to provide incident radiation into said reactor through which the waste gas to be irradiated flows, characterized in that said method comprises

forming a closed fluid flow system including the space between the two window-foils,

flowing a cooling fluid through the closed system such that cooling fluid is caused to flow over both of the window-foils whereby to cool the window-foils,

monitoring at least one of the physical parameters of the cooling fluid, and

producing a response to a change in such physical parameter that is indicative of a break in the window-foil that closes the radiation inlet opening of the reactor.

4,283,938

METHOD AND APPARATUS FOR DYNAMIC CONCENTRATION OF A SUSPENSION

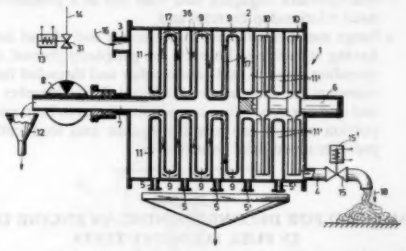
Wolfgang Epper, Bergheim-Zievenich, and Rupprecht Graf, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,112

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2844023

Int. Cl.³ G01N *11/14*

U.S. Cl. 73—59 **14 Claims**



9. An apparatus for dynamic concentration of a suspension, comprising:

a filter including a suspension intake, a concentrate discharge and a rotatable stirring device;

a prime mover connected to and operable to rotate said stirring device;

first means connected to said prime mover for operating said stirring device at a predetermined speed;

second means connected to said prime mover for measuring the power consumption and providing an actual speed signal;

comparison means connected to said second means;

third means connected to said comparison means and operable to feed upper and lower limit values to said comparison means, said comparison means operable in response to an actual speed signal which transgresses a limit signal to limit a speed correction signal; and

fourth means connected between said third means and said prime mover for adjusting the operating speed in response to the speed correction signal.

4,283,939

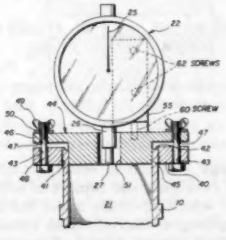
DIAL GAUGE MOUNTING APPARATUS

Robert M. Edward, Jr., The Woodlands, Tex., assignor to JB Development Corporation, The Woodlands, Tex.

Filed Dec. 31, 1979, Ser. No. 108,581

Int. Cl.³ G01N *3/42*

U.S. Cl. 73—81 **2 Claims**



1. Improved mounting apparatus for attaching a dial gauge to the housing of a hardness tester in which is carried a load cell, said dial gauge including a plunger extending from the

base thereof for engagement with said load cell and responsive thereto for motivating the operating mechanism and indicator of said dial gauge, said mounting apparatus including a cap member attachable to the upper end of said housing and having a central aperture through which said dial gauge plunger projects for said engagement with said load cell wherein the improvement comprises:

a central hub portion provided on said cap member projecting downwardly into said housing for engagement with the upper end of said load cell, said dial gauge being attached to said cap member by a support member so that said dial gauge plunger is centrally and freely disposed in said aperture engaging said load cell in a predetermined axial relationship thereto; and

a flange member attached to the upper end of said housing having at least two holes on the periphery thereof, corresponding holes in said cap member and threaded fastener members for engagement with said flange member holes and said corresponding cap member holes to hold said hub portion of said cap member against said load cell in a predetermined axial relationship.

4,283,940

METHOD FOR DECONDITIONING AN ENGINE USED IN FUEL ECONOMY TESTS

Harold Shaub, New Providence, and Joseph M. Pecoraro, Red Bank, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 3, 1980, Ser. No. 109,230
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 **14 Claims**

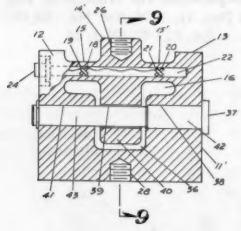
1. A method for deconditioning an engine used in fuel economy tests for a lubricating oil comprising replacing a test lubricating oil after it is tested in said engine with a deconditioning oil composition comprising a lubricating base oil containing an overbased alkali or alkaline earth metal compound selected from the group consisting of sulfonates, phenates, phosphonates and thiophosphonates in an amount sufficient to give the deconditioning oil a total base number of about 15 to about 100 or a neutral alkali or alkaline earth metal compound selected from the group consisting of sulfonates, phenates, phosphonates and thiophosphonates in an amount of at least 5% by weight.

4,283,941

DOUBLE SHEAR BEAM STRAIN GAGE LOAD CELL

Ali U. Kutsay, 3250 Lewis Rd., Newtown Square, Pa. 19073

Filed May 8, 1979, Ser. No. 37,231
Int. Cl.³ G01L *1/22*
U.S. Cl. 73—862.66 **1 Claim**



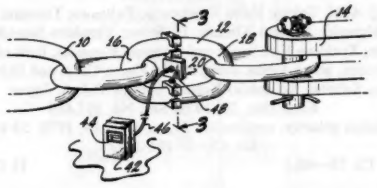
1. A strain gage load cell of unitary construction for the measurement of axial loads and capable of substantially resisting lateral loads which adversely affect the measurement of axial loads comprising a relatively thick rectangular block of material, said block having a pair of recesses in one edge thereof, each of said recesses extending from a point spaced from one edge to a point spaced from the center and forming a central element of substantial area, said block further including a pair of elongated slots extending through said block at points spaced from the first said recesses and substantially parallel therewith and a narrow elongated slot connecting said pair of slots, the last said slots forming a discrete central element supported by substantially uniform elongated rectangular shear beams formed by said recesses and said pair of slots, said block further including an opening extending from one edge thereof and centrally through said shear beams and central element, pairs of strain gages mounted within said opening and positioned centrally of said shear beams, the gages of each pair being disposed at 90° one relative to the other and at 45° relative to the axis of the associated shear beam and means for applying an axial stress to be measured between said central element and the opposing surface of said block, said narrow elongated slot being of U-shaped configuration forming a centrally disposed recess in said block and an elongated central element extending into said recess, said block further including a second opening extending therethrough and through said elongated central element and a shear pin extending through the last said opening, said shear pin and the last said opening having clearance therebetween to limit the deflection of said central element under axial stress.

4,283,942

LOAD MEASURING DEVICE

Stanley S. Fishfader, 5868 Compass Dr., Los Angeles, Calif. 90045

Filed May 25, 1979, Ser. No. 42,515
Int. Cl.³ G01L *5/00, 5/10*
U.S. Cl. 73—862.65 **10 Claims**



1. A load measuring device for use in situ with an existing link in a load bearing line and with the link formed as an oval loop and with the link having end portions along a first long axis of the link for receiving a load on the link along the first long axis, including

a load cell for mounting across a second short axis of the link and within the loop and with the second short axis substantially perpendicular to the first long axis for providing an indirect measurement of the load on the link along the first long axis in accordance with the force on the load cell along the second short axis,

coupling means for mounting on opposite portions of the link and with the load cell mounted between the coupling means and with the coupling means transmitting the force to the load cell along the second short axis from the link and for providing a secure mounting of the load cell across the link,

the load cell including means responsive to the force on the load cell along the second short axis for producing an output signal in accordance with the force on the load cell,

the load cell including at least one cantilever portion and at least one beam portion and with the cantilever portion responsive to the force on the load cell for producing a stress in the beam portion and with the means included in the load cell responsive to the stress in the beam portion, and

indicator means responsive to the output signal from the means included in the load cell for providing an output

indication representative of the load on the link along the first long axis.

4,283,943

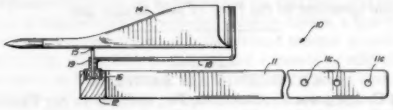
METHOD AND APPARATUS FOR INDICATING AND ADJUSTING THE ANGULAR POSITION OF A SAIL

George H. Schoneberger, Jr., 3710 N. 7th St., Phoenix, Ariz. 85014

Continuation-in-part of Ser. No. 974,077, Dec. 28, 1978, abandoned. This application May 18, 1979, Ser. No. 39,881

Int. Cl.³ G01W 1/00

U.S. Cl. 73—188 2 Claims



1. Apparatus for directly indicating the horizontal angle between the tangent to the luff or effective luff of a sail and the direction of the apparent wind, comprising:

(a) a bracket carried by the luff or effective luff of said sail;

(b) a wind vane pivotally mounted on said bracket, which

(i) is continuously responsive to the direction of the apparent wind at angles between and including the optimum angle for maximum sail pulling power and the angle at which said sail stalls, and

(ii) directly indicates said horizontal angle.

4,283,944

APPARATUS FOR MEASURING THE MASS OF A FLUID MEDIUM

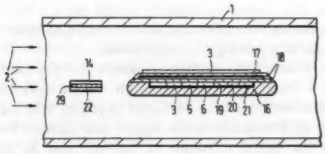
Heiko Gruner, Gerlingen, and Dieter Handtmann, Sindelfingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,937

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904154

Int. Cl.³ G01F 1/68

U.S. Cl. 73—204 6 Claims



1. An apparatus for measuring the mass of a fluid medium such as the mass of air induced in internal combustion engines comprising, in combination, a measuring bridge circuit, a carrier, at least one temperature-dependent measuring resistor connected in said measuring bridge circuit and disposed in the flow of said medium, said at least one temperature-dependent measuring resistor applied as a film to said carrier, the temperature and/or resistance of said resister being regulated in accordance with the flowing mass to provide a manipulated variable as a measure for the mass of the fluid medium, a temperature-dependent heating resistor applied as a film to said carrier between the temperature-dependent measuring resistor and the carrier in electrically insulated relationship with said temperature-dependent measuring resistor, a heating bridge circuit including said temperature-dependent heating resistor wherein said temperature-dependent heating resistor is regulated to approximately the same temperature as said temperature-dependent measuring resistor.

4,283,945

VOLUME MEASURING APPARATUS

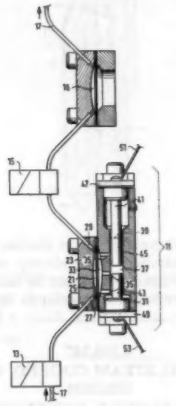
Dieter B. Knoll, Kronberg, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 7, 1980, Ser. No. 110,272

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 7903413[U]

Int. Cl.³ G01F 11/02

U.S. Cl. 73—269 1 Claim



1. A volumeter, in particular for use in liquid chromatography, comprising:

a first metering chamber for the volume to be measured;

a second chamber being separated from the first chamber by a resilient diaphragm and forming an electric capacitor; said second chamber including:

at least two capacitor electrodes insulated against each other; and

a dielectric liquid in contact with the diaphragm and filling the gap between the electrodes to a higher or lower degree in response to deviations of the diaphragm;

wherein any deviation of the diaphragm resulting from volume variations in the first chamber will change the capacitance of the capacitor.

4,283,946

SAMPLING PROBE FOR GRANULAR MATERIAL

Milford D. Bowser, Savage, and Vallace W. Vandre, Minneapolis, both of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

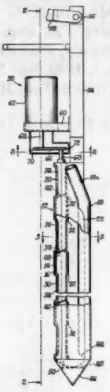
Filed Dec. 15, 1977, Ser. No. 860,754

Int. Cl.³ G01N 1/14

U.S. Cl. 73—864.31 19 Claims

1. A sampling probe for obtaining a sample of granular material from a bulk quantity of such material, said probe comprising, sampling tube means including an elongate sampling tube adapted to be inserted into a bulk quantity of granular material, means operatively associated with said elongate sampling tube and defining a mixing chamber extending substantially along the length of said sampling tube and adapted for insertion into said granular material with said sampling tube, said sampling tube having at least one first opening therein opening outwardly of said tube for receiving a granular sample therein, and having at least one second opening therein communicating with said mixing chamber, said sampling tube means including means operatively associated with said elon-

gate sampling tube for selective registration with said openings therein so as to facilitate sequential entry of granular sample into said elongate sampling tube through said first opening, close said first opening to isolate said sample in said elongate



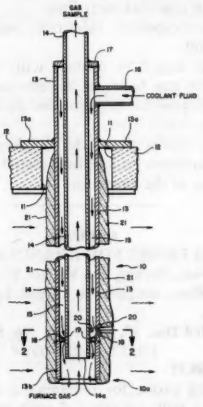
sampling tube, and thereafter effect discharge of said sample into said mixing chamber, and delivery means operatively associated with said mixing chamber to facilitate removal of granular sample therefrom for transfer to an inspection site.

4,283,947

SELF CLEANING, STEAM COOLED, GAS SAMPLE PROBE

David B. George, and Leonard K. Bailey, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sep. 10, 1979, Ser. No. 74,059
Int. Cl.³ G01N *1/22*
U.S. Cl. 73—863.11 **4 Claims**



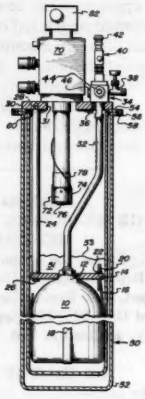
1. A gas sampling probe adapted for installation in an industrial furnace for removing sample portions of the gaseous atmosphere within such furnace, comprising a shield tube having an open end for placement within the furnace; a sample tube concentrically disposed within the shield tube and spaced therefrom to provide an annular passage for a coolant fluid, said sample tube terminating within the shield tube in an open end that is protectively surrounded by said shield tube; a partition plate extending across said annular passage between the shield tube and the sample tube adjacent to the open end of the latter, said partition plate being secured to the shield tube but terminating short of the sample tube, so as to permit free expansion and contraction of such sample tube and provide restricted passage for coolant fluid toward and past the open end of the sample tube to keep it clean; means for introducing a coolant fluid into said annular passge at or near the other end of the shield tube; port means at one side of the shield tube and at the side of the partition plate that is away from the open ends of the tubes, so as to discharge a major amount of the coolant fluid from the annular passage into a stream of furnace gas flowing past the probe; and means discharging sample gas from the sample tube at or near the other end thereof, so that the flow of that portion of the coolant fluid that passes by the partition plate in said annular passage is in substantially the opposite direction to the flow of said sample gas.

4,283,948

CRYOGENIC AIR SAMPLER

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 21, 1979, Ser. No. 106,218
Int. Cl.³ G01N *1/24*
U.S. Cl. 73—863.11 **5 Claims**



1. An apparatus for collecting and storing a sample of environmental gas comprising in combination:

means to removably confine a sample bottle, said bottle having a metering orifice through which environmental gas can enter, in a bath of liquid cryogen said means including an evacuable space above said sample bottle allowing for liquid cryogen to boil-off and be confined therein;

means to condense said cryogen boil-off thus maintaining said sample bottle at a temperature of just below the normal boiling temperature of said liquid cryogen; and

means to effect rapid cool-down of said sample bottle.

4,283,949

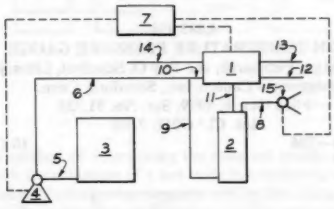
DILUTE SOLUTION APPARATUS

Joseph M. Hulme, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Dec. 5, 1979, Ser. No. 100,394
Claims priority, application Canada, Mar. 28, 1979, 324301
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—864.34 **4 Claims**

1. An apparatus for the preparation of a dilute solution of a sample of a fluid which apparatus comprises a valve means communicating with a dilution means, a line to said dilution means to supply diluent from a reservoir to said dilution means, a line in communication with said valve means to remove

diluted sample from said dilution means through said valve means, a line in communication with said dilution means having a valve for connection to a supply of compressed gas thereto or for connection to atmospheric pressure, flow control means to control flow of diluent from said reservoir to said dilution means, and control means for controlling operation of said valve means, said valve and said flow control means, wherein said valve means comprises a two-position valve having a housing equipped with ports, the chamber of said housing containing a movable two-position valve core equipped with flow channels each of which separately communicates with two adjacent ports, a first port being in communication with inlet means for said fluid, a second port being in communication with an outlet means for said fluid, a third port being in communication with said dilution means, a fourth port being in communication with the diluted sample in said dilution means and a fifth port being for removal of said diluted sample from the apparatus, a first said flow channel communicating in its first position with said first and second ports and in its second position with said second and third ports and a second flow channel communicating in its first position with said third and fourth ports and its second position with said



fourth and fifth ports, and wherein said dilution means comprises a narrow diameter cylindrical chamber connected at its upper end to the third port of said valve means and connected at its lower end to a wide diameter closed cylindrical chamber which has at the side wall at its lower end a line in communication with the fourth port of said valve means and said reservoir and has at its upper end a line having a valve therein whereby said line may be connected to a supply of compressed gas or to the atmosphere, said narrow diameter cylindrical chamber having located concentrically therein and axially slidably movable within a close fitting plunger equipped with seals to prevent fluid leakage and having at its lower end depending into said wide diameter chamber a flange end for abutting engagement with the under surface of the wide diameter chamber at the point where the narrow diameter cylindrical chamber is attached to the wide diameter chamber, and said wide diameter closed cylindrical chamber having concentrically located therein and axially slidably movable within a close fitting, double acting barrier piston equipped with seals to prevent fluid leakage and having a stirring means located within said wide diameter chamber and below said double acting barrier piston.

4,283,950

DEVICE FOR DETACHING AND REMOVING A DISPOSABLE TIP OF A PIPETTE

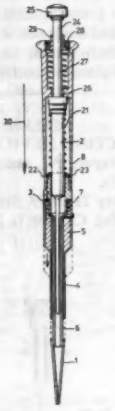
Jukka Tervamäki, Helsinki, Finland, assignor to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi, Finland

Filed Jul. 24, 1979, Ser. No. 60,042
Claims priority, application Finland, Aug. 4, 1978, 782401
Int. Cl.³ B01L *3/02*; G01N *1/14*
U.S. Cl. 73—864.14 **7 Claims**

1. A device for removing a detachable tip of a pipette of the hand-held type having a tubular portion on which said detachable tip is press-fitted, comprising:

a sleeve slidably mounted above said tubular portion, said sleeve being displaceable from a first position out of engagement with said tip to a second position in engagement with said tip to displace and detach said tip from said tubular portion, and

inertia means coupled for movement with said sleeve, said insertia means having a mass sufficient to cause said sleeve



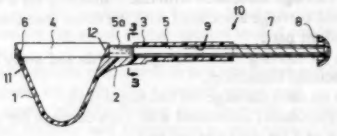
to be displaced from said first to said second position and to remove said tip upon the motion caused by the rapid movement of a user's hand, of said pipette in a direction toward said tip.

4,283,951

MEASURING CUP WITH LEVELER

Leonid Varpio, Keskuskatu 23 A, 48100 Kotka 10, Finland

Filed Aug. 29, 1979, Ser. No. 70,861
Claims priority, application Finland, Sep. 4, 1978, 782703
Int. Cl.³ G01F *19/00*
U.S. Cl. 73—426 **9 Claims**



1. Measuring and dispensing apparatus for accurately measuring and dispensing a precise volume of granular material or the like, comprising:

a cup portion having a peripherally extending rim defining a mouth of said cup portion, said rim having a free edge lying in a plane and wherein said cup portion includes a side wall defining with said plane a desired interior volume;

an elongate handle portion extending from said cup portion, said handle portion having a longitudinally extending bore formed therein:

a leveler member including a ring-shaped member having an inner surface in the shape of a truncated cone, the edge of said inner surface which defines the minor base of the truncated cone substantially conforming to the configuration of the free edge of said cup portion rim and being contiguous thereto in the normal position of said leveler member;

an elongate rod slidably located in said handle portion bore having one end thereof connected to said ring-shaped leveler member; and

spring means located over said elongate rod for urging said leveler member back to the normal position after the latter has been displaced therefrom during operation;

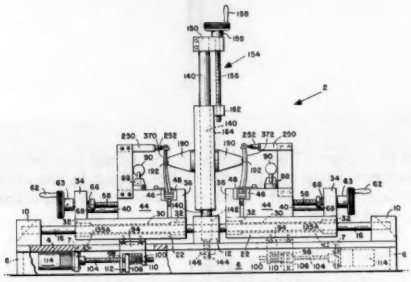
whereby when said leveler member is in normal position said inner surface thereof functions as a funnel to facilitate filling said cup portion and when said elongate rod is urged in its longitudinal direction against the force of said spring means to move said leveler member for said normal position, surplus granular material is lifted onto and carried by said conical inner surface thereof so that the material which remains in the cup portion interior fills the same precisely to said plane of the free edge of the rim thereof.

4,283,952

FLAW DETECTING DEVICE AND METHOD

John W. Newman, Wayne, Pa., assignor to Laser Technology, Inc., Norristown, Pa.

Filed May 21, 1979, Ser. No. 40,678
Int. Cl.³ G01H *13/00*
U.S. Cl. 73—579 **14 Claims**



1. A device for detecting flaws in a test part comprising:
a sweep generator,
a drive amplifier supplied by the sweep generator,
a pair of electrical to mechanical transducers connected to the amplifier,
a first carriage associated with one transducer for a test part,
a second carriage associated with the other transducer for a standard part,
means for moving each carriage towards and away from its associated transducer,
means on each carriage for holding a part,
an accelerometer associated with each carriage for contacting a part on the carriage, and
means responsive to the signals from the accelerometers for the comparison of the signals.

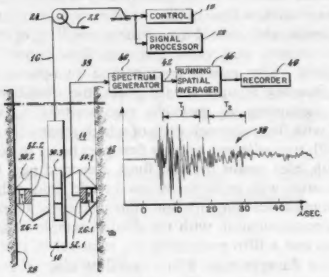
4,283,953

METHOD AND APPARATUS FOR DETERMINING A GRANULARITY PROPERTY OF A SUBSURFACE FORMATION AROUND A BOREHOLE

Thomas J. Plona, Brookfield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 955,821, Oct. 30, 1978, abandoned. This application Oct. 18, 1979, Ser. No. 83,104
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—589 **28 Claims**

1. In a method for determining a subsurface formation parameter which characterizes a granularity property of a subsurface formation around a borehole comprising the steps of
directing like pulses of ultrasonic energy from inside the borehole at the subsurface formation with frequency bandwidths selected to produce acoustic backscatter from grains in the formation, the range of acoustic frequencies in said pulses being selected such that the acoustic backscatter from inside the formation includes frequencies which attenuate in a manner which is charactertistic of a granularity property of the subsurface formation for a broad range of formation grain sizes and formation porosity conditions; and



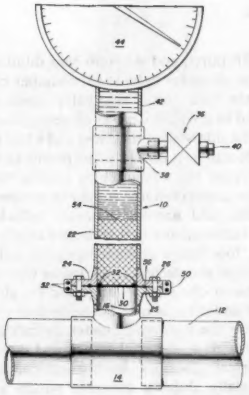
detecting said acoustic backscatter produced by said pulses of ultrasonic energy.

4,283,954

HIGH TEMPERATURE PRESSURE GAUGE

J. Paul Echtler, Pittsburgh, and Roy O. Scandrol, Library, both of Pa., assignors to Conoco Inc., Stamford, Conn.

Filed Oct. 4, 1979, Ser. No. 81,735
Int. Cl.³ G01L *7/08*
U.S. Cl. 73—706 **10 Claims**



1. A high temperature pressure gauge apparatus, said apparatus comprising:
(a) a conduit means;
(b) a pressure gauge means positioned in fluid pressure sensing communication with a first end of said conduit means;
(c) a diaphragm mounting means positioned near a second end of said conduit means;
(d) a diaphragm means positioned in said diaphragm mounting means, said conduit means being adapted to contain a low melting metal alloy positioned in said conduit means above said diaphragm in an amount sufficient to fill said conduit means to a level between said first end of said conduit means and said second end of said conduit means, said conduit means being further adapted to contain a fluid, thermally stable at temperatures in excess of the melting point of said low melting metal alloy, said fluid substantially completely filling said conduit means above said low melting metal alloy and said pressure gauge; and,
(e) a connecting means for positioning said diaphragm in

pressure sensing communication with a high temperature fluid stream.

4,283,955

METHOD OF AND MEASURING APPARATUS FOR DETERMINING THE STANDARD TENSILE YIELD POINT UNDER LOAD CONDITIONS

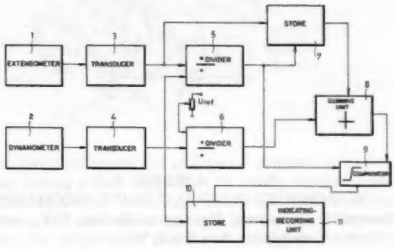
Ferenc Nagy; Ferenc Szabo, and Zoltan Szücs, all of Szekesfehervar, Hungary, assignors to Magyar Aluminiumipari Troszt, Budapest, Hungary

Filed Jul. 2, 1979, Ser. No. 53,751

Claims priority, application Hungary, Jul. 4, 1978, AU 405

Int. Cl.³ G01N *3/08*

U.S. Cl. 73—772 **3 Claims**



1. A method of determining the standard tensile yield point in which the extension of a test body is monitored, wherein in the course of continuous extension within the elastic limit, the ratio of the instantaneous extension and the associated load is determined and stored, and in the course of further continuous extension the ratios of a given residual extension as well as that of the instantaneous extension and the instantaneous load are determined, the stored ratio value is summed with the ratio of the given residual extension and the instantaneous load, and the thus obtained sum is compared with the ratio of the instantaneous extension and the instantaneous load whereby the instantaneous load at which the compared values become substantially equal gives the tensile yield stress at the given residual extension.

4,283,956

METHOD OF DETECTING THE ONSET OF CRACKING IN ARTICLES DURING DYNAMIC TESTING

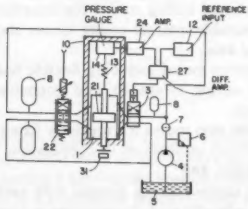
Karl Lechner, Gröbenzell, and Erich Bösmiller, Unterschleisheim, both of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,710

Claims priority, application Fed. Rep. of Germany, May 17, 1978, 2821553

Int. Cl.³ G01N *3/36*

U.S. Cl. 73—799 **7 Claims**



1. A method of detecting the onset of cracking in an article subjected to dynamic loading, including subjecting the article to a dynamically changing load, and additionally loading and vibrating the article at its natural frequency, and determining the onset of a crack by noting a change in the natural frequency.

4,283,957

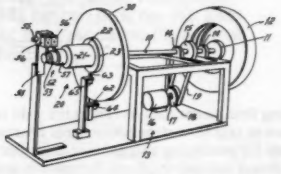
TORSIONAL EXCITER FOR A ROTATING STRUCTURE

Gerald S. Zobrist; Terry A. Dunlap, both of Cincinnati, and Richard H. Russell, Milford, all of Ohio, assignors to Zonic Corporation, Cincinnati, Ohio

Filed Jun. 25, 1979, Ser. No. 51,947

Int. Cl.³ G01N *3/36*

U.S. Cl. 73—814 **26 Claims**



1. An exciter for applying torque to a rotating structure, comprising:

a rotary hydraulic actuator including a first element and a second element, said second element being rotatable relative to said first element;

means for securing one of said first and second elements to said rotating structure;

an inertial mass mounted on the other of said first and second elements;

a hydraulic power supply for supplying pressurized fluid; and

electrohydraulic means for controlling said actuator, said electrohydraulic means including:

(a) a torque setpoint circuit for selectively producing a torque command signal to set a desired amplitude and frequency for torque applied to said rotating structure;

(b) means for producing a torque feedback signal dependent on the actual torque applied to said rotating structure;

(c) a controller responsive to said command and feedback signals for producing a control signal; and

(d) means interconnecting said hydraulic power supply and actuator and responsive to said control signal for controlling the supply of pressurized fluid to said actuator such that said actuator oscillates said inertial mass with respect to said rotating structure at said desired amplitude and frequency;

whereby a controlled dynamic torsional force is applied to said rotating structure.

4,283,958

MAGNETIC FLOWMETER HAVING AUTOMATIC RANGING

William R. Freund, Jr., Hatfield, and John C. Grebe, Jr., Norristown, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,766

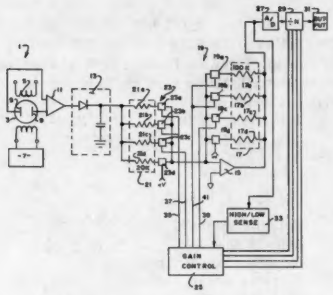
Int. Cl.³ G01F *1/60*

U.S. Cl. 73—861.12 **10 Claims**

1. In a magnetic flowmeter comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, means for generating a magnetic field in said fluid flowing through said body, means for producing a flow-dependent signal dependent on the electric field generated in said fluid flowing through said magnetic field, and amplifier means for amplifying said flow-dependent signal to produce an amplified flow-dependent signal, and further signal processing

means for receiving said amplified flow-dependent signal and producing an output signal dependent thereon,

the improvement comprising automatic ranging means com-



prising first means for increasing the gain of said amplifier means as said flow-dependent signal decreases and second means for producing a signal in said further signal processing means indicative of said increase in gain.

4,283,959

EXTERNAL ROTOR GYROSCOPE

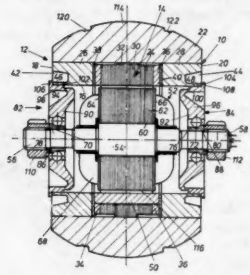
Bernhard Strittmatter, Nussdorf, and Wolfgang Syré, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Uberlingen, Fed. Rep. of Germany

Continuation of Ser. No. 803,752, Jun. 6, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,381

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646376

Int. Cl.³ G01C *19/08*

U.S. Cl. 74—5.7 **3 Claims**



1. In a gyroscope comprising jacket-shaped rotor means with an opening therethrough, a stator located inside the opening of the rotor means, an axle firmly attached to the stator and defining an axis of rotation with the stator having two sides in planes generally normal to said axis, and prestressed ball bearing assemblies at both sides of the stator and mounted on said axle, each bearing assembly including an inner ring and an outer ring with balls therebetween, said rotor means having two ends with end faces thereat in planes generally normal to said axis, said rotor means including an annular jacket member and an annular motor drive member centrally within and secured to the jacket member, said rotor means having, about said opening, an inner surface which at said ends forms bearing surfaces cylindrical about said axis, said outer rings of said bearing assemblies including outer faces with cylindrical circumferential surfaces received directly in said bearing surfaces respectively and flanges abutting said end faces respectively, the improvement comprising:

said rotor means between said end faces including three parts, namely, a central part and two end parts, said three parts being all within and engaging said jacket member and all defining a straight cylindrical through bore concentric with said axis and being said opening, said motor drive member forming said central part, said rotor means including annular end members forming said end parts respectively, said annular end members having inner walls defining said bearing surfaces and end faces in said planes of said rotor means, said end faces of said end members having annular grooves extending inwardly from said planes of said rotor means, concentric to the axis of rotation and positioned at a distance from said opening such that said inner walls adjacent the end faces of the end members define resilient rim portions against which said outer rings are mounted as aforesaid.

4,283,960

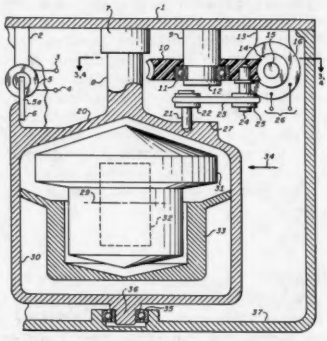
GYROSCOPE INDEXING DRIVE MECHANISM

Thomas R. Quermann, Huntington Station, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 67,842

Int. Cl.³ G01C *19/38*

U.S. Cl. 74—5.41 **8 Claims**



1. In a gyroscopic compass:

rotatable internal casing means journaled about a normally vertical axis within external casing means,

sensitive gyroscopic means supported within said rotatable internal casing means and having an axis normally coinciding with said normally vertical axis,

motive means including non-reversing motor means within said external casing means for intermittently oscillating said rotatable internal casing means about said normally vertical axis,

said motive means including flexible link means coupling said motor means to said rotatable internal casing means,

mechanical stop means for precisely fixing the limits of said intermittent oscillations in cooperation with said flexible link means, and

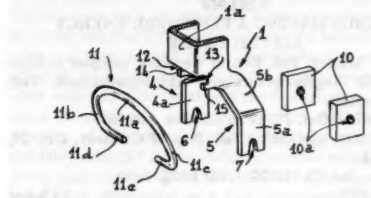
electrical contact means integral with said mechanical stop means whereby said motor means is driven for a predetermined time after each operation of said contact means whereby said flexure means is flexed to a predetermined degree.

4,283,961

ACTUATOR OF AN ELECTRICAL STARTER

Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, Lyon, France

PCT No. PCT/FR 78/00013, § 371 Date Mar. 19, 1979, § 102(e) Date: Mar. 19, 1979, PCT Pub. No. WO 79/00061, PCT Pub. Date Feb. 22, 1979
This PCT application filed Jul. 19, 1978, Ser. No. 24,211
Claims priority, application France, Jul. 25, 1977, 77 23826
Int. Cl.³ F02N 11/02
U.S. Cl. 74—6 5 Claims



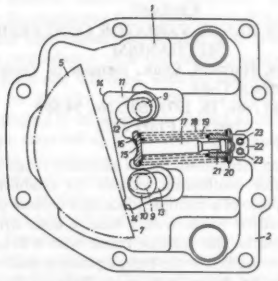
1. In an electrical starter for an internal combustion engine, the starter having a shaft supporting an axially slidable actuator, and having a lever forked to provide two arms straddling the actuator, and each arm carrying a friction block disposed to contact the actuator to displace it axially, an improved means for attaching the friction blocks to the arm wherein each block has a hole extending into it and oriented normal to the shaft, each block being located inside of an arm between the arm and the actuator, and a wire stirrup member having two mutually aligned pivot portions comprising the ends of the wire and joined by a curved body portion, said arms each having an opening therethrough receiving one of said end pivot portions which portions respectively pass through the arms and into the holes in the blocks, and means on the lever to retain the body portion of the stirrup.

4,283,962

SPRING RETURN MECHANISM FOR AXIAL PISTON MACHINES

Franz H. Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 25, 1978, Ser. No. 899,814
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720711
Int. Cl.³ F16H 21/18; F01B 3/00; F04B 1/26
U.S. Cl. 74—42 10 Claims



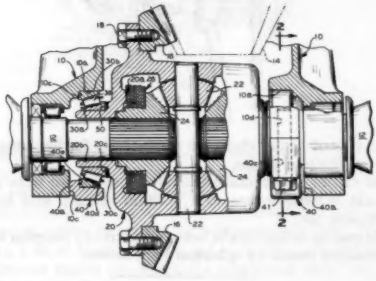
1. A variable delivery axial piston machine having a housing, a part angularly adjustable about an axis to vary the delivery of the machine and having a zero stroke position, mechanism for restoring said part to a zero stroke position, stops arranged on opposite sides of said axis and cooperating with said mechanism to define said zero stroke position, said mechanism comprising a movable yoke lever in contact with and movable relative to said angularly adjustable part, said yoke lever contacting said angularly adjustable part on opposite sides of said axis when said angularly adjustable part is in said zero stroke position and engaging said stops in said zero stroke position and being movable relative to said stops and said angularly adjustable part and lifted off one of said stops on movement of said angularly adjustable part from said zero stroke position, and spring means acting on said movable yoke lever to bias said movable yoke lever against said angularly adjustable part and at least one of said stops.

4,283,963

BEARING CAP RETAINER FOR AUTOMOTIVE DIFFERENTIAL UNIT

John L. Hickey, and Gerald A. Wuest, both of Fort Wayne, Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Jan. 11, 1979, Ser. No. 2,657
Int. Cl.³ F16C 35/04; F16H 35/08
U.S. Cl. 74—400 4 Claims



1. A bearing mounting assembly for an automotive type differential having a stationary housing, a rotor disposed in said housing, a pair of axially spaced antifriction bearing means rotatably supporting and centering said rotor in said housing, each of said bearing means having one half of its circular periphery snugly mounted in a semi-cylindrical machined bore in said stationary housing, and the remainder of its periphery exposed, a pair of threaded bolt holes on opposite sides of each of said semi-cylindrical machined bores, a semi-circular radial surface on each said housing axially outwardly adjacent to each said exposed periphery, a bearing retaining cap of 180° peripheral configuration constructed and arranged to engage and enclose said exposed portion of each said anti-friction bearing, each said retaining cap having a radial end face constructed and arranged to abut one of said semi-circular radial surfaces on said housing in final assembly, said bearing retaining cap having a pair of axially enlongated bolt receiving slots for respective reception of a pair of bolts passing through said slots into said threaded holes in said stationary housing, and axially adjustable means for eliminating end play between said rotor and said housing.

4,283,964

CONTROL SYSTEM FOR POWER SHIFT TRANSMISSION

Giorgio Grattapaglia, Turin, Italy, assignor to Fiat-Allis Machine Movimento Terra S.p.A., Lecce, Italy

Filed Jul. 23, 1979, Ser. No. 59,957
Claims priority, application Italy, Oct. 9, 1978, 69330 A/78
Int. Cl.³ G05G 9/04
U.S. Cl. 74—471 XY 12 Claims

1. A control lever mechanism for controlling the operation of a hydraulic device comprising

housing means providing a sealed enclosure,

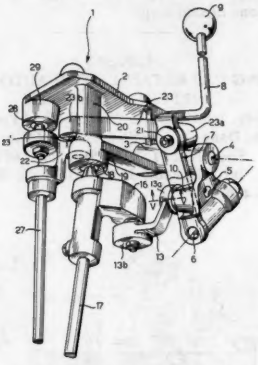
said housing means enclosing a linkage means positioned therein,

a control lever extending exteriorly of said housing means

and pivotally coupled to said linkage means for pivotal movement in a plurality of planes,

a pair of output shafts operatively coupled to the linkage means for rotatable movement for controlling the operation of a hydraulic device in response to the pivotal movement of said control lever,

said linkage means including spherical joint means,



said pair of output shafts are respectively further coupled to said housing means,

said pair of output shafts extending downward from within said housing means to a position beneath said housing means, and

said pair of output shafts being respectively coupled to said housing means by spherical joint means.

4,283,965

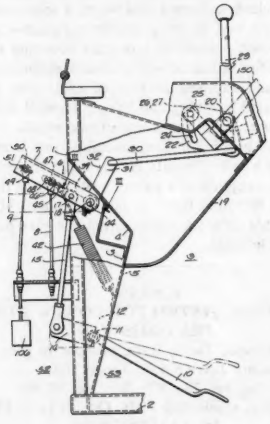
HAND AND FOOT THROTTLE CONTROL

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 4, 1979, Ser. No. 72,235

Int. Cl.³ G05G *1/14, 11/00*

U.S. Cl. 74—482 **10 Claims**



1. A throttle control on a vehicle comprising means including a wall defining an operator station and separating the operator station from an engine compartment, a hand throttle shaft pivotally mounted on and extending through said wall for transmitting throttle movement through said wall, a control linkage including a hand throttle lever connected to said hand throttle shaft, an adjustable fuel metering arm pivotally mounted on said shaft, a lift arm connected to said shaft for lifting said metering arm when said hand throttle lever is operated, an accelerator pedal, an accelerator pedal shaft connected to said accelerator pedal and pivotally mounted on and extending through said wall for transmission of accelerator pedal movement through said wall, a fuel metering control mechanism including said metering arm connected to said hand throttle shaft and said accelerator pedal shaft for selective and alternative operation by said accelerator pedal and said hand throttle lever.

4,283,966

OMNIBUS HAVING A FLYWHEEL ENERGY ACCUMULATOR

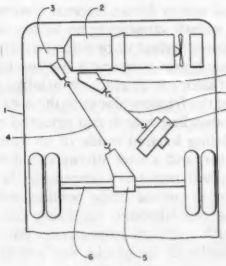
Faust Hagin, Munich, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 846,168

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649241

Int. Cl.³ G05G *1/00*; B60K *1/00*

U.S. Cl. 74—572 **2 Claims**



1. In an omnibus including a drive block constituted of an engine, clutch and transmission; a flywheel energy accumulator; and a connecting shaft coupling said transmission and said flywheel energy accumulator, the improvement comprising: said drive block extending transversely rearwardly of the rear axle of said omnibus; an angle drive including a cardan shaft extending from the driving end of said drive block to a center axle drive on said rear axle, said flywheel energy accumulator being installed intermediate said drive block and said rear axle.

4,283,967

EXTENDED RANGE VARIATOR CONVERSION MECHANISM

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

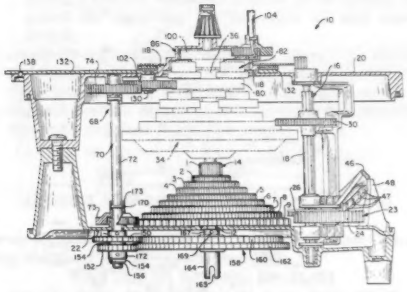
Filed Nov. 16, 1979, Ser. No. 94,699

Int. Cl.³ F16H *3/22*

U.S. Cl. 74—681 **5 Claims**

1. A conversion mechanism for an extended range unit volume price variator mechanism settable for establishing the amount of each place of a multiple place unit volume price and comprising a variator frame with a base, a main drive shaft rotatably mounted on the variator frame with a lower input end thereof extending below the base, a primary stack of coaxial gears mounted on the main drive shaft above the variator base; a plurality of rotatable drive range arm assemblies for a plurality of places of ascending order respectively of the multiple place unit volume price having respective rotatable range arm shafts rotatably mounted on the variator frame with their axes radially offset from and generally parallel to the axis of the primary gear stack, respective range arms pivotally and axially shiftable on the respective range arm shafts for selective engagement with the primary stack of gears for rotating the

respective range arm shafts therewith, and a range arm output gear on each range arm shaft; a rotary differential gear mechanism coaxial with the primary gear stack in engagement with the range arm output gears for combining the rotatable drives through the range arms with relative drive ratios in accordance with their respective places; and a higher place price selector mechanism for establishing a next higher place price to said plurality of places of ascending order and having a rotatable drive take-off assembly with a take-off shaft rotatably mounted on the variator frame generally parallel to and radially offset from the primary gear stack, a take-off shaft input gear in engagement with and driven by one of the gears of the primary gear stack and rotatably mounted on the take-off shaft for being coupled for directly rotating the take-off shaft therewith, and take-off shaft driven gear means driven by the take-off shaft; a rotary summation differential in operative engagement with said differential gear mechanism; and a higher place price selector with a selector member shiftable between a plurality of operational positions thereof and a selector gear rotatably mounted on the shiftable selector member for operatively interconnecting the take-off shaft driven gear means and summation differential in a first operational position of the



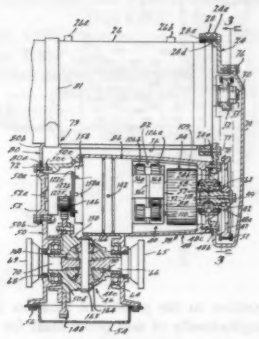
shiftable selector member; the summation differential being operable for combining the rotatable drives through the differential gear mechanism and selector gear with relative drive ratios in accordance with the respective places of the unit volume price and whereby, with the take-off shaft input gear coupled for directly rotating the take-off shaft, the selector gear is adapted to be selectively shifted to its first position for selectively establishing a said next higher place price of a; the conversion mechanism being operable for converting the higher place price selector mechanism for selectively establishing a said next higher place price of (a+1) and comprising a replacement take-off shaft for being rotatably mounted on the variator frame with a lower end thereof extending below the base, a first center gear, means for mounting the first center gear below the base on the lower input end of the main drive shaft to be driven therewith, a first take-off shaft drive gear mounted on the replacement take-off shaft below the base and in operative engagement with the first center gear for driving the take-off shaft, in place of said take-off shaft input gear, at a drive ratio which is greater than the drive ratio through said input gear by a factor equal to (a+1)/a for establishing a said next higher place price of (a+1) with the shiftable selector member.

4,283,968

HOUSING ASSEMBLY FOR ELECTRIC VEHICLE TRANSAXLE

Ilmars Kalns, Northville, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 25, 1979, Ser. No. 51,577
Int. Cl.³ F16H *37/08, 3/74, 3/56*
U.S. Cl. 74—701 **8 Claims**



1. A housing assembly for a ratio change transmission having an input means rotatably driven by an output shaft of a prime mover, said assembly comprising:

a transmission housing rotatably supporting said input means and an output means and including mounting means defining a set of equally spaced and circumferentially disposed fastener means concentrically positioned about the rotational axis of said input means;

a prime mover housing rotatably supporting said output shaft and including mounting means defining a set of equally spaced and circumferentially disposed fastener means concentrically positioned about the rotational axis of said output shaft; and

an adapter member including first and second mounting means each defining a set of equally spaced and circumferentially disposed fastener means respectively engageable with said transmission and prime mover housing fastener means for rigidly securing the transmission and prime mover housings together, for positioning said axes substantially parallel to and radially spaced from each other, and for positioning said transmission and prime mover housings on said first and second mounting means in incrementally clocked positions determined by the circumferential spacing of the respectively engageable fastener means.

4,283,969

BICYCLE TRANSMISSION

Fernand S. Lapeyre, 1224 Octavia St., New Orleans, La. 70115

Filed Jun. 27, 1977, Ser. No. 810,112
Int. Cl.³ F16H *5/52*
U.S. Cl. 74—810 **15 Claims**

1. A pedal displacement actuatable multi-speed transmission for bicycles, comprising

a pedal shaft rotatably displaceable within the pedal shaft hub of a bicycle frame,

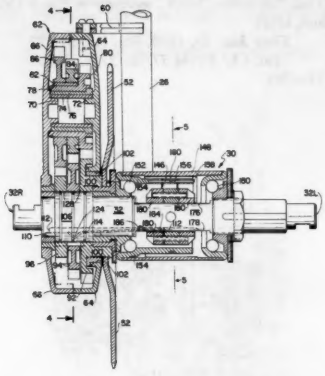
a plurality of drive gears rotatably mounted on said pedal shaft,

means for connecting each of said drive gears into selective driving engagement with said pedal shaft,

collar means mounted on said pedal shaft for rotation in conjunction therewith and permitted longitudinal displacement therealong,

means engageable with said collar means and responsive to a predetermined arc of reverse rotative displacement of said

pedal shaft for displacing said collar means longitudinally thereof, and



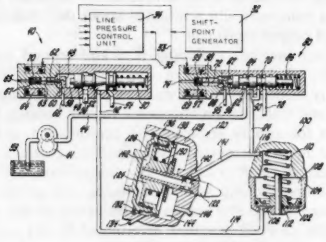
means responsive to the positional location of said collar means longitudinally of said pedal shaft for effecting the selected connection of each of said drive gears into driving engagement with said pedal shaft.

4,283,970

AUTOMATIC TRANSMISSION LINE PRESSURE CONTROL

William J. Vukovich, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1979, Ser. No. 53,781
Int. Cl.³ B60K *41/06, 41/10*
U.S. Cl. 74—866 **9 Claims**



1. A compensated line pressure regulator for a vehicular multi-gear ratio automatic shift transmission for controlling the line pressure applied to hydraulic elements of the transmission that are operative to shift the transmission between gear ratios comprising:

means responsive to at least one vehicular operating parameter for developing a first electrical signal indicative of a desired line pressure;

means including electrically energizable means for generating a variable line pressure the magnitude of which is a function of an electrical control signal applied thereto;

means responsive to the shifting of said transmission between first and second gear ratios for generating a shift-time signal indicative of the time elapsed in shifting from said first gear ratio to said second gear ratio;

means for generating a reference signal indicative of the desired shift-time for shifting from said first gear ratio to said second gear ratio;

means responsive to said reference signal and to said shift-time signal for generating a correction signal the magnitude of which is a function of the difference between said reference signal and said shift-time signal;

means for modifying said first electrical signal as a function of said correction signal to form a control signal; and

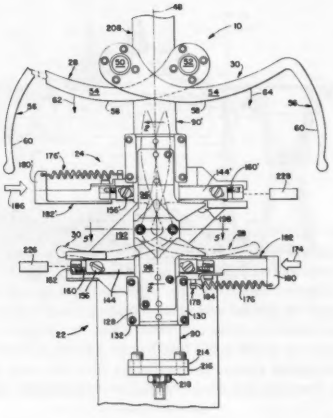
means for applying said control signal to said electrically energizable means whereby said first electrical signal is compensated when said transmission is shifted from said first gear ratio to said second gear ratio to adjust the line pressure to bring the actual and desired shift-times into substantial correspondence.

4,283,971

WIRE END LOCATING DEVICE FOR A WIRE-WORKING STATION

James R. Hetmanski, Perry Hall, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 25, 1979, Ser. No. 51,643
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.51 **7 Claims**



1. A wire working machine having a wire working means that performs a wire working function on the end of a wire presented to the wire working means along a predetermined axis that is fixed relative to the wire working machine, said machine comprising:

first and second pick-up arms, each of which has a first portion and a second portion which intersects at an angle to define an interior angle side and an exterior angle side of each pick-up arm;

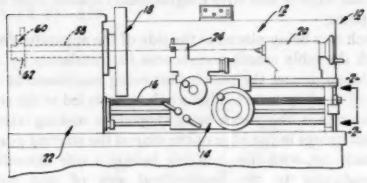
each of said pick-up arms movably supported on a support means associated with the wire working means on opposite sides of the predetermined wire-working axis in adjacent planes with their respective interior angle sides facing each other, said pick-up arms movably supported for movement from an open, spaced apart position to a closed position in which the intersection between said first and second portions of each pick-up arm define a wire working opening substantially coincident with the wire working axis; and

actuator means connected to said pick-up arms for moving said pick-up arms between said open and said closed positions.

4,283,972
THREAD CHASER MECHANISM FOR A LATHE

Louis C. Mergel, Jr., 1319 Chapel Ave., San Leandro, Calif. 94579

Filed Aug. 23, 1979, Ser. No. 68,905
Int. Cl.[3] B23B 1/00; B23G 11/00
U.S. Cl. 82—5 6 Claims

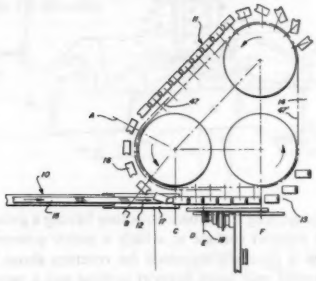


1. A thread chaser for a lathe comprising:
a. means for detecting and signalling a selected rotational position of the lead screw of the lathe comprising:
a first switch, means for activating said first switch during a selected rotational position of the lead screw, and means for signalling the activation of said first switch;
b. means for detecting and signalling a selected rotational position of the spindle of the lathe comprising:
a second switch, means for activating said second switch during a selected rotational position of the spindle, and means for signalling the activation of said second switch;
c. means for indicating coincidental occurrence of a selected rotational position of the lead screw and a selected rotational position of the spindle, said indicating means receiving said position signals of said detecting and signalling means for said lead screw and spindle.

4,283,973
METHOD AND APPARATUS FOR HANDLING ARTICLES

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Nov. 15, 1979, Ser. No. 94,491
Int. Cl.[3] B65G 47/90; B26D 1/56, 7/06; B65G 17/48
U.S. Cl. 83—23 13 Claims

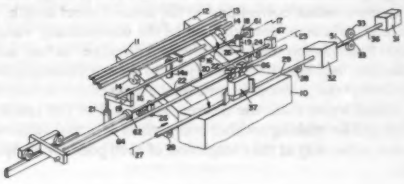


1. A method of handling stacks of web units comprising advancing a series of stacks along a first lineal path while the same are gripped by first gripping means also advancing in said first path, turning said first gripping means 90° while directing said first gripping means through an arcuate quadrant and into a second lineal path normal to said first path advancing said first gripping means in said second path, actuating second gripping means also being advanced in said second path to grip stacks therein and thereafter sequentially deactuating said first gripping means and laterally translating second gripping means with said stacks to a third lineal path parallel to said second path whereby said stacks are presented for subsequent processing in spaced apart relationship with a dimension of said stack remaining parallel with the center line of said first path as it is advanced through said first, second and third paths.

4,283,974
BAR END DROPPER FOR FORGING MACHINES OR THE LIKE

Gaylen O. Kline, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Aug. 6, 1979, Ser. No. 63,763
Int. Cl.[3] B26D 5/20
U.S. Cl. 83—42 16 Claims

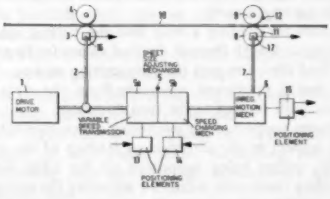


1. A cyclically operable machine for shearing blanks from a piece of stock, comprising a shear having a shear plane and operable to sequentially cut blanks of measured length from the forward end of a piece of stock during each cycle, a transfer operable to sequentially transfer blanks from said shear to a subsequent processing station during each cycle, a feeder intermittently operable to feed pieces of stock to said shear during each cycle, and sensing means including a sensor operable to determine the cycle when the portion of the end of a piece of stock within said shear beyond said shear plane is of insufficient length to produce a full blank and operable to cause said transfer to reject said portion after it is sheared, said sensing means being operable to establish when normal feeding would position the end of a piece of stock a predetermined distance from said shear plane which is insufficient to provide a satisfactory shearing operation and is operable to modify the distance through which said feed operates to ensure that said one end is spaced from said shear plane a sufficient distance to provide a satisfactory shearing operation, said sensor causing said transfer to reject two pieces on two cycles of operation of said shear when the operation of said feed is modified.

4,283,975
SYSTEM FOR SETTING THE SHEET LENGTH ON A CROSSCUTTER FOR WEBS OF MATERIAL

Heiko Knoll, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 74,705
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840377
Int. Cl.[3] B26D 5/20
U.S. Cl. 83—76 5 Claims



1. In a system for setting the sheet length on a cross-cutter for webs of material which comprises a feeding means includ-

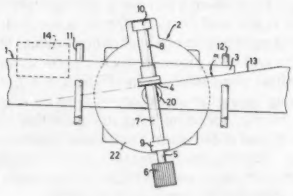
ing a pair of feed rolls, cutting means including a pair of cutter rolls preceded by an irregular-motion mechanism and an positioning element associated therwith, a common drive motor, and a sheet-size adjusting mechanism disposed between the feeding means and the irregular-motion mechanism and including a speed-changing mechanism and a continuously variable speed transmission and positioning elements associated therewith, the improvement comprising: first means forming a first control loop for the positioning element of the irregular-motion mechanism; second means forming a second control loop for the positioning element of the speed transmission; means for producing a positioning signal for one speed corresponding to the desired sheet length and for applying same to the first control loop, the positioning element of the speed changing mechanism and to the second control loop, wherein the desired values correspond to the desired sheet length, and wherein the second control loop of the continuously variable speed transmission includes means receptive, as an actual value, the sheet length for specifying to the associated positioning element the positioning time on the basis of the deviation of the actual value from the desired value and of the speed selected and for making another comparison of actual value with desired value only at the completion of each positioning operation.

4,283,976

APPARATUS FOR PRECUTTING METAL STRIP IN THE MANUFACTURE OF SPIRAL STRIP PIPES, E.G. VENTILATION DUCTS

Karl F. Wennerström, Stockholm, Sweden, assignor to Prov & Verktyg AB, Sweden

Filed Jan. 15, 1979, Ser. No. 3,719
Claims priority, application Sweden, Jan. 17, 1978, 7800535
Int. Cl.³ B26D *1/56;* B23D *25/02*
U.S. Cl. 83—301 **7 Claims**



1. Apparatus for uninterruptedly manufacturing spiral strip to be used for fabricating spiral strip piping, said apparatus being positioned along a feed path for operating on continuous strip material having a longitudinal axis and opposite edges extending parallel with said axis, the apparatus comprising in combination:

strip cutting means comprising an upper driven knife wheel and means for driving the upper driven knife wheel to rotate about a rotative axis thereof; and a lower freely rotating, circular, substantially horizontal support roller with a substantially vertical rotation axis for cooperating with the upper driven knife wheel for cutting the strip fed to the cutting means;

feed means for feeding a strip into the cutting means in a continuous length thereof; the feed means feeding the strip in a feed direction past the strip cutting means;

punch means positioned upstream from the strip cutting means, with respect to the feed direction;

table means supported for swiveling in rotative orientation with respect to the direction of feeding of the strip; the cutting means being supported on the table means for swiveling therewith; means for adjusting the swivel orientation of the table means, prior to the feeding of the strip and the cutting thereof, for adjusting the location of the upper driven knife wheel around the support roller knife, which adjusts the angle of the cut across the strip for a selected pipe diameter;

means for translating the table means across the feed direction of the strip for enabling the strip to be cut at an angle to the feed direction thereof so that said cutting means cuts the strip along a straight line extending from a first point on one edge of said strip to a second point on the opposite edge of said strip longitudinally spaced from said first point;

the punch also being placed at the side of the apparatus from which the table means commences its translation by the translating means; the punch thus being positioned at the edge of the strip to be cut before the strip is fed to the strip cutting means; the punch being shaped for making triangular stampings in the edge of the strip at the starting points for each cut, with the stamping having a side extending perpendicular to the longitudinal axis of said strip, wherein the stampings act as cutting location marks for the upper knife eliminating the free, projecting, triangular plate tip which would otherwise be formed at the beginning of the cut strip;

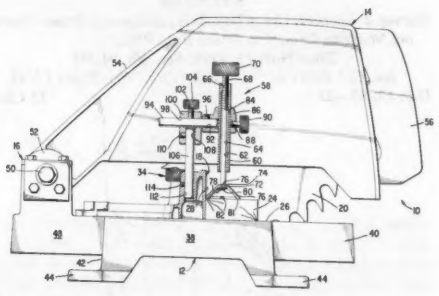
said cutting means being positioned so that each cut is made coextensive and parallel with another side of the triangular stamping in said strip.

4,283,977

MOTORIZED MITER CHOP SAW WITH WORK-PIECE CLAMP

William A. Batson, Pickens, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 2, 1979, Ser. No. 90,713
Int. Cl.³ B23D *47/04*
U.S. Cl. 83—453 **6 Claims**



1. Miter saw comprising a cast base structure having a generally planar work support surface to which a motor powered circular chop saw is pivotally mounted for rotation about an axis generally parallel said work support surface and a work-piece positioning fence pivotally carried by said base support structure for rotation about an axis generally perpendicular to both said surface and said first mentioned axis, together with a single clamping means movably mountable for selectively clamping a work-piece in either a hold-in arrangement against said fence or in a hold-down arrangement against said work support surface, said fence being constructed and arranged to include means for enabling said clamping means to be mounted therewith for said hold-down arrangement and said cast base structure being constructed and arranged to include means for enabling said clamping means to be mounted therewith for said hold-in arrangement.

4,283,978
NOTCHING MACHINE

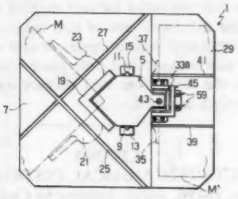
Shigeo Kasai, Sagamihara; Toshiaki Nishiyama, Fujisawa, and Kiju Kawada, Atsugi, all of Japan, assignors to Amada Company Ltd., Kanagawa, Japan

Filed May 10, 1979, Ser. No. 38,006

Claims priority, application Japan, May 10, 1978, 53-61484[U]

Int. Cl.³ B26D *3/14, 7/26*

U.S. Cl. 83—620 **1 Claim**



1. A notching machine comprising:
a frame;
a table being mounted on said frame;
a means for holding shearing tools being provided with said table;
a ram member being vertically movably mounted on said frame;
an upper shearing tool being provided with said ram member;
a lower shearing tool cooperating with said upper shearing tool, said lower shearing tool being divided into a plurality of pieces; and
screw means for adjustably holding said lower shearing tool in said means for holding shearing tools in such a manner that horizontal clearance between said upper and lower shearing tools may be changed in lateral, forward, and backward directions independently.

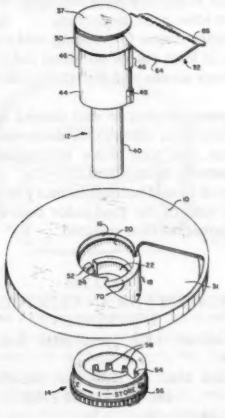
4,283,979
ADJUSTABLE SLICING BLADE ASSEMBLY

William J. Rakocy, Nutley, N.J., and Silvio Bellotti, New Hyde Park, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Jul. 10, 1979, Ser. No. 56,169

Int. Cl.³ B26D *7/26*

U.S. Cl. 83—666 **8 Claims**



1. An adjustable slicing blade assembly, which comprises a spacer disk having a centrally disposed circular opening; a cylindrical flange extending from the under side of said spacer disk and surrounding said circular opening; an inwardly projecting, axially extending shoulder on the inner surface of said cylindrical flange; one or more axially extending slots provided in the inner surface of said flange; a rotatable shaft axially movable within said cylindrical flange and through said circular opening, said shaft including an axially extending portion having a diameter less than the maximum diameter of said shaft such that said portion axially slidingly engages said shoulder; one or more axially extending ribs provided on said shaft for respectively engaging said one or more flange slots; a slicing blade extending radially from the upper end of said shaft; an adjustment ring having an inner diameter enabling it to be axially slid over said lesser diameter portion of the rotatable shaft; a knob protruding from said lesser diameter portion of the rotatable shaft; an axially extending slot provided on the inner surface of said adjustment ring for engaging said knob and thereby enabling said ring to be slid onto the rotatable shaft into a position above said knob; and a plurality of axially extending recesses provided on the inner surface of said adjustment ring and opening through the under side of said ring; said recesses respectively being of varying depth and arranged for engagement by said knob, whereby the separation between the slicing blade and the spacer disk may be varied.

4,283,980
COMBINATION PORTABLE AND STATIONARY, BENCH-MOUNTED CHAIN SAW APPARATUS

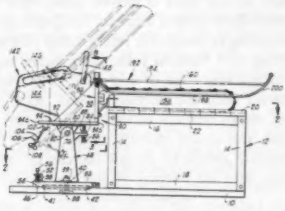
Edward L. Jackson, P.O. Box 636, Pauls Valley, Okla. 73075

Continuation of Ser. No. 741,716, Nov. 15, 1976. This application Sep. 18, 1978, Ser. No. 942,961

The portion of the term of this patent subsequent to Nov. 28, 1995, has been disclaimed.

Int. Cl.³ B27B *17/02*

U.S. Cl. 83—798 **18 Claims**

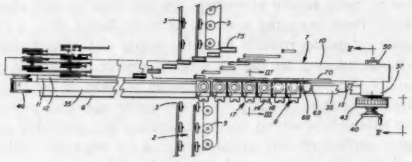


1. Chain saw apparatus comprising:
turntable means pivotable about a vertical axis;
a pedestal subassembly mounted on said turntable means for pivotation therewith;
a cradle frame subassembly pivotally supported on said pedestal subassembly for pivotation about a horizontal axis and including a cradle frame having plate-receiving channels forming a part thereof;
a portable chain saw including:
a mounting plate slidably inserted in, and removable from, said cradle frame to facilitate rapid manual placement of the portable chain saw in, and removal thereof from, said cradle frame;
a prime mover mounted on one side of said mounting plate above said pedestal subassembly;
a saw blade guide plate projecting from said prime mover through said mounting plate; and
a saw blade movably mounted on, and guided by, the edges of said guide plate, projecting through said mounting plate and drivingly connected to said prime mover; and
a table positioned under said saw blade guide plate for supporting a workpiece to be sawn with said chain saw.

4,283,981
INDEXING MECHANISM FOR TOOL HEAD

Hugh M. Trautmann, Evans City, Pa., assignor to Billco Manufacturing, Inc., Zelienople, Pa.

Filed Dec. 3, 1979, Ser. No. 99,887
Int. Cl.[3] B26D *3/08*
U.S. Cl. 83—884 7 Claims

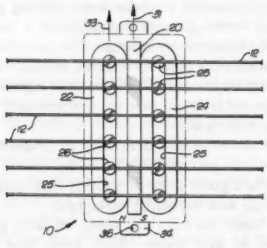


1. In apparatus for treating material including a table having idler rolls to support the material, a drive roll to move the material over said idler rolls, vertical rolls at an edge of said table to guide the material as it passes over the idler rolls, an elongated beam extending across and spaced above the table and a track attached to and extending substantially throughout the length of said beam, the improvement comprising a plurality of independently adjustable carrier heads supported on said track for movement along the length of said beam, each of said carrier heads having a bracket attached thereto adapted to support apparatus for treating material as the material passes over said table below said beam, drive means independently engageable with each of said carrier heads to individually move the head with which it is engaged along said track to position said carrier head along said beam over said table, means on each of said carrier heads to engage and disengage said carrier head with said drive means, means operatively connected with said drive means to determine the linear distance each carrier head is moved along said track over said table by said drive means, a carrier head storage section on said beam extending in cantilever relationship past said edge of said table having said vertical rolls, stop means on said beam located adjacent said edge of said table to prevent carrier heads from moving onto the portion of said beam over said table, adjustable means on each of said carrier heads to contact said stop means, and means on each of said carrier heads to release said adjustable means to permit the carrier head to pass said stop means onto the portion of said beam over said table.

4,283,982
MAGNETIC PICKUP FOR ELECTRIC GUITARS

Daniel K. Armstrong, 710 Marguerita, Santa Monica, Calif. 90402

Filed Jan. 26, 1979, Ser. No. 6,929
Int. Cl.[3] G10H *3/18*
U.S. Cl. 84—1.15 13 Claims



1. A magnetic pickup for a stringed musical instrument, comprising in combination:

a polar bar magnet having a longitudinal axis, a vertical axis, and a transverse polar axis extending across the thinnest cross-sectional dimension of said magnet;

a coil having a winding axis and a hollow center;

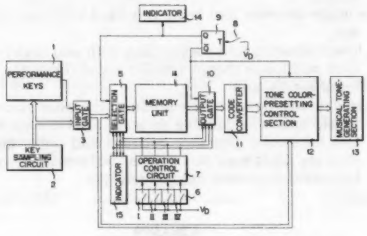
a magnetically permeable pole piece separate from said magnet and extending upwardly parallel to said magnet vertical axis for positioning adjacent an instrument string; and

with said magnet positioned longitudinally parallel to said coil having said polar axis perpendicular to the winding axis of said coil so that the only magnetic field in the pickup is that provided by said magnet along said transverse polar axis, with one of said magnet and pole piece placed within said hollow center of said coil and with the other of said magnet and pole piece placed outside said coil with the field from said magnet entering said pole piece through said coil.

4,283,983
ELECTRONIC MUSICAL INSTRUMENT

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,907
Claims priority, application Japan, Apr. 18, 1978, 53-45650; Dec. 27, 1978, 53-164865
Int. Cl.[3] G10H *1/06*
U.S. Cl. 84—1.19 24 Claims



1. An electronic musical instrument comprising:

first memory means having a large plurality of tone color memories for storing tone color information in the form of binary codes, said tone color information comprising a plurality of data elements for determining various tone colors, the respective data elements being stored in the respective tone color memories;

second memory means for reading said tone color information from at least one of said tone color memories of said first memory means and for storing said tone color information;

selecting means coupled to said second memory means for selecting one data element for determining a desired tone color from said tone color information stored in said second memory means; and

means coupled to said second memory means for producing a musical tone of the tone color determined by the tone color information thus selected.

4,283,984
CAPTURE SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Alfred H. Faulkner, 1324 Portesuello Ave., Santa Barbara, Calif. 93105

Filed Mar. 26, 1980, Ser. No. 134,250
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.24 6 Claims

1. In an electronic musical instrument having a plurality of potentiometer type presets for selecting desired tone parameters and corresponding voltage controlled circuits to effect the desired tonal response, an improved circuit arrangement for

supplying the control voltage to the voltage controlled circuits comprising:

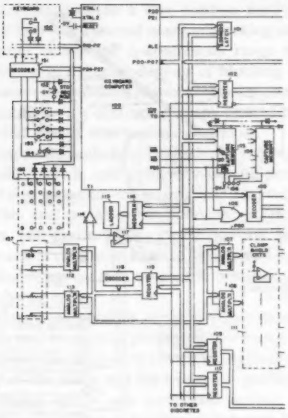
an analog-to-digital converter,

a first analog multiplexer,

a controller operative to connect said presets in sequence to a controller input via said multiplexer and said converter,

a digital-to-analog converter,

a second multiplexer,



a clamp-and-hold circuit for the control input of each of said voltage controlled circuits,

said controller being operative to connect said clamp-and-hold circuits to a controller output in like sequence via said second multiplexer and said digital-to-analog converter, and programmatic means in said controller for effecting a non-linear transfer function between certain of said presets and corresponding ones of said voltage controlled circuits.

4,283,985

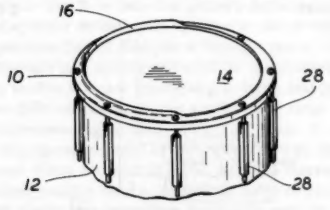
DRUMS

Dominick S. Famularo, 1897 Voshage St., Baldwin, N.Y. 11510

Filed Mar. 27, 1979, Ser. No. 24,418

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—411 R **5 Claims**



5. A drumhead comprising a drum sheet extending over the body of a drum, an annular rim resting upon said drum sheet, said rim having a first cross-section formed by orthogonal flanges for only a portion of its periphery, one flange extending a conventional height parallel to the body of the drum, the other flange extending a conventional width orthogonal to the body of the drum, and a second cross-section for the remaining portion of its periphery formed only by the flange extending a conventional width orthogonal to the body of the drum, and lugs extending from said body of said drum to clamp said drum sheet and rim.

4,283,986

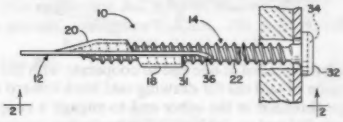
SELF-PENETRATING WALLBOARD ANCHOR

Francis C. Peterson, St. Charles; Gerald D. Barth, South Elgin, and Rodney O. Slotten, Batavia, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 78,864

Int. Cl.³ F16B *21/00*

U.S. Cl. 411—340 **10 Claims**



1. A fastener assembly for attaching articles to wallboard said assembly comprising a self-penetrating anchor member capable of being pushed or driven through said wallboard said anchor having a first length and a headed, threaded fastener having a second greater length; said anchor member including a plate-like structure with a penetrating point on the leading end thereof, a recess extending longitudinally of said anchor member which receives said fastener and is formed by a first semi-cylindrical segment projecting in one direction from the plane of the plate-like structure and having an inner face, said semi-cylindrical segment extending generally along the axis of said anchor member at one axial position thereof, said segment having first and second edges; and by a second semi-cylindrical segment projecting in the opposite direction from the plane of the plate-like structure having an inner face and also extending generally along the axis of said anchor member at a second axial position thereof, said second segment also having first and second edges; a projection for engaging the front of the fastener for transmitting an axial drive force applied to the head of the fastener to the anchor member, said projection sloping from a position generally in the plane of one of the semi-cylindrical segments to a position generally in the plane of the plate-like structure; an aperture extending through said plate between said semi-cylindrical segments of a size and figuration to receive said fastener said aperture being formed by the first edge of said first semi-cylindrical segment and by the second edge of said second semi-cylindrical segment; means for causing a pivotal rotation of said anchor member relative to the axis of said fastener from a position in which the two inner faces of the semi-cylindrical segments engage the threaded shank to a position in which the first and second aperture-forming-edges engage the threaded shank; whereby the fastener assembly can be pushed or percussively driven by means of the fastener head into the wallboard until the anchor member passes completely therethrough at which time the means for causing pivotal rotation of said anchor member relative to said fastener will cause the anchor to be reoriented to a position extending across the axis of the fastener and the fastener threadingly advanced through said aperture.

4,283,987

EXPLOSIVE RELEASE CLAMP SYSTEM

Gerhardt C. Stichling, West Caldwell, and James McPherson, Succasunna, both of N.J., assignors to Cartridge Actuated Devices, Inc., Fairfield, N.J.

Filed Jun. 25, 1979, Ser. No. 51,470

Int. Cl.³ F42B *3/00*

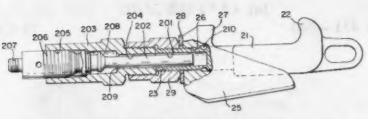
U.S. Cl. 89—1 B **7 Claims**

7. An explosive release clamp comprising:

(a) a hook bolt provided with a hook at one end and a cylindrical tail at the other, said tail having a threaded position near its free extremity and an undercut portion providing a region of weakened tensile strength adjacent the end of the threaded position nearer the hook, said tail having an axial bore extending from said free end to a point within

said undercut portion, said bore being adapted to receive the impact delivery rod of an explosive actuator device,

(b) a body member having a bore for receiving said tail and an anvil portion facing said hook in clamping relationship, and



(c) a nut threaded at one end to cooperate with the threaded region of said tail for drawing said hook toward said anvil and threaded at the other end to engage a cooperatively threaded end on the body of an explosive actuator device.

4,283,988

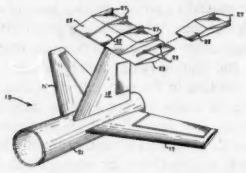
TAIL CARRIAGE OF STORES

Kenneth M. Edwards, Niceville, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 14, 1979, Ser. No. 66,358

Int. Cl.³ F41F *5/02*

U.S. Cl. 89—1.5 R **2 Claims**



1. In combination, a tail carriage of stores on a low-flying aircraft having a tail assembly with horizontal and vertical stabilizers at the aft end of the fuselage thereof and a plurality of aerodynamically configurated stores disposed on the tail assembly, a platform positioned atop the vertical stabilizer for releasably carrying said stores thereon, said platform being oriented perpendicular to the longitudinal axis of the fuselage of the aircraft and parallel to the horizontal stabilizers, means for releasing said stores from said platform causing one of said stores to separate from the aircraft such that the forward momentum of the aerodynamically configurated store produces a lifting force causing the store to rise in a free-flight trajectory well above the level flight of the aircraft whereupon the store loses momentum and falls to the ground after the aircraft has cleared the area.

4,283,989

DOPPLER-TYPE PROJECTILE VELOCITY MEASUREMENT AND COMMUNICATION APPARATUS, AND METHOD

Peter P. Toulios, Oakbrook, and Kenneth D. Hartman, DeKalb, both of Ill., assignors to ARES, Inc., Port Clinton, Ohio

Filed Jul. 31, 1979, Ser. No. 62,558

Int. Cl.³ F41C *17/00*

U.S. Cl. 89—6.5 **30 Claims**

7. Projectile barrel velocity determining and projectile communicating apparatus which comprises:

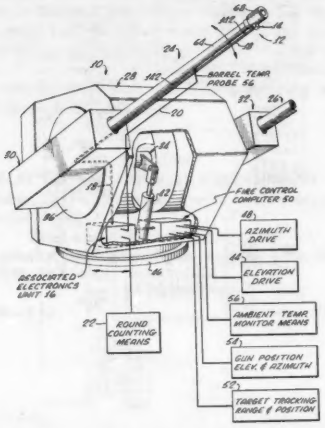
(a) a microwave probe;

(b) means adapted for fixing the probe to a projectile barrel adjacent to a muzzle end thereof with a probe inner end adjacent to, but out of the path of projectiles traveling through the barrel;

(c) microwave reference oscillator means connected to the probe for providing microwave energy thereto for introduction thereby into the barrel to which the probe is fixed, frequency of said oscillator means being selected to excite a fundamental electromagnetic mode in the barrel;

(d) mixer means connected to the probe for receiving therefrom microwave energy reflected by a projectile traveling through the barrel, and for extracting therefrom a Doppler frequency signal corresponding to projectile barrel velocity;

(e) processor means connected to the mixer means for receiving the Doppler frequency signal therefrom and for obtaining from the Doppler frequency signal the corresponding projectile barrel velocities; and,



(f) means for communicating information to said projectile while the projectile is within transmitting range of the probe, said communicating means including means for selectively modulating the reference oscillator frequency to include the information to be communicated to the projectile.

4,283,990

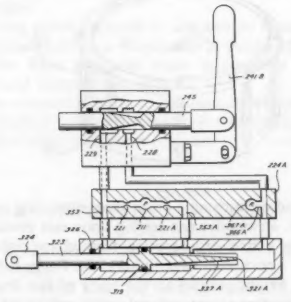
FLUIDIC REPEATER

Willie B. Leonard, 5902 Royalton, Houston, Tex. 77036

Division of Ser. No. 872,826, Jan. 27, 1978, which is a division of Ser. No. 622,760, Oct. 15, 1975, Pat. No. 4,094,229, and a continuation-in-part of Ser. No. 521,036, Nov. 5, 1974, Pat. No. 4,046,059, which is a continuation-in-part of Ser. No. 489,829, Jul. 18, 1974, Pat. No. 3,988,966. This application Aug. 2, 1979, Ser. No. 62,964

Int. Cl.³ F15B *15/22;* **F01B** *13/04*

U.S. Cl. 91—47 **2 Claims**



1. Fluidic repeater comprising:

a transmitter, a responder, a single line for transmitting pressure signals between said transmitter and responder, and fluid supply means including a source of pressure fluid for causing a pressure fluid to flow through said line,

said transmitter including a variable flow obstructor connected in the aforementioned pressure signal transmitting line between one end thereof and said responder to create a variable pressure difference upstream and downstream of the obstructor and thereby vary the pressure in the portion of said line between said obstructor and said responder,

said transmitter further including operator means connected to the flow obstructor for changing the position of the obstructor between a first position partly blocking said fluid flow and a second position blocking said fluid flow to a lesser extent and a continuous range of intermediate positions of differing degrees of blocking said fluid flow between the blocking in said first and second positions and maintaining the obstructor in any desired one of said first, second and all intermediate positions,

said responder including a cylinder having a piston movable axially therein, said cylinder having a peripheral surface and said piston having a periphery adapted to slide axially within said peripheral surface over a range of axial motion, said piston having two transverse portions athwart the axis of the piston adapted to receive fluid pressure, said cylinder having two transverse portions athwart the axis of the cylinder,

said transverse portions of the cylinder being farther apart than said transverse portions of the piston leaving spaces between the transverse portions at each end of said periphery of the piston and the transverse portions at the corresponding end of said peripheral surface of the cylinder when said piston is positioned between the ends of said range of axial motion,

the aforementioned pressure signal transmitting line connecting at its other end to the responder cylinder to communicate with one of said spaces,

opposition means communicating with the other of said spaces creating an opposing force thereon independent of the position of the transmitter operating means, and

feedback means including a flow passage communicating with the other of said spaces to vary the pressure therein by connecting the last said space to reservoir of fluid at lower pressure than said line without passing through said pressure signal transmitting line, a variable flow restrictor in said flow passage, and means connecting said variable flow restrictor to said responder to cause displacement of said flow restrictor in an amount dependent upon the amount of displacement of said responder piston and independent of the rate of said piston's displacement and of the length of time said piston's displacement persists,

said cylinder including an aperture in one of said transverse portions thereof, said piston having a piston rod extending through said aperture adapted for connection to a load,

said feedback means functioning to bring said piston to rest in different positions over a continuous range of positions corresponding to said continuous range of positions of said operator means of said transmitter to thereby place said piston rod and any load attached thereto in any desired position over a continuous range of positions,

said single line extending from said one of said spaces through said obstructor to said reservoir of fluid at lower pressure than said line,

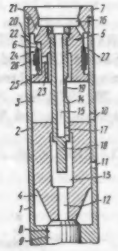
said fluid supply means comprising a branch line having a second flow restrictor therein extending from said single line between said one of said spaces and said obstructor through said second flow restrictor to said source of pressure fluid, whereby fluid from said source can flow through said second flow restrictor and branch line to said single line and thence through a portion of said single line and said variable flow obstructor of the transmitter to said reservoir, by-passing said one of said spaces.

4,283,991

PERCUSSION MECHANISM

Viktor A. Gaun, ulitsa Gogolya, 21a, kv. 14; Anatoly V. Belousov, prospekt K. Marxa, 55, kv. 56; Vadim D. Petukhov, ulitsa Kropotkina, 127, kv. 493; Gennady I. Suxov, ulitsa Sovetskaya, 47, kv. 22; Nikolai A. Belyaev, ulitsa Petukhova, 114, kv. 11; Vitaly K. Alyabiev, ulitsa Udarnaya, 29, kv. 105, and Klimenty E. Rassomakhin, ulitsa B. Bogatkova, 163/8, kv. 100, all of Novosibirsk, U.S.S.R.

Division of Ser. No. 811,836, Jun. 30, 1977, Pat. No. 4,194,435.
This application Jul. 2, 1979, Ser. No. 54,431
Claims priority, application U.S.S.R., Jul. 7, 1976, 2391708
Int. Cl.³ F01L *21/02, 25/04*
U.S. Cl. 91—299 **4 Claims**



1. A percussion mechanism of the type having a relatively long piston stroke and limited consumption of working fluid actuated by a pressurized working fluid supplied from a source of pressurized fluid, comprising a housing (52) with an internal cylindrical space and exhaust ports (59, 60) and having at least one longitudinal side passage (61) connected to an idle stroke chamber;

a fluid actuated piston (54) positioned for axial reciprocation in said internal cylindrical space of said housing and dividing said internal cylindrical space into a working stroke chamber (55) of a variable volume and said idle stroke chamber (56) of a variable volume, and each of said chambers communicating with one of said exhaust ports;

fluid distributing means (53) having radial passages (71) and cooperatively associated with pressure responsive surfaces of a resilient annular valve element (73, 74) adapted to create inlet passages (75,76) for distributing the fluid into said working stroke chamber (55) of the mechanism;

a closure (67) having inlet means for said housing (52) defining with said fluid distributing means (53) a supply space (63) for receiving said pressurized fluid from said source;

at least one inlet passageway (78) formed between said fluid distributing means and said housing connecting said supply space (63) with said idle stroke chamber (56) via said at least one side passage (61);

a work performing member (58) accommodated in said housing (52) to receive impacts from said piston (54) reciprocated by the action of the fluid;

valve seats provided in a surface of said fluid distributing means, their number equalling that of the radial passages (71) in said fluid distributing means (53) connecting said working stroke chamber (55) with said inlet passages (75, 76);

said resilient annular valve element (73,74) being stretched tight about an outer surface of said fluid distributing means (53) in opposition to said radial passages (71) in said fluid distributing means and encircling said fluid distributing means about its periphery, an internal surface of said resilient valve element (73,74) with the valve seats defining at least one of said inlet passages (75,76) for controlling fluid flow about said fluid distributing means (53) and for controlling fluid flow into said working stroke chamber, whereby said piston is repeatedly driven up and down in

said housing by the action of said fluid flowing into and out of said chambers and said exhaust ports via said distribution means and said inlet passages (**75, 76**), said radial passages **71**, said at least one inlet passageway (**78**) and said at least one side passage; and whereby a portion of said resilient valve element located opposite said at least one longitudinal side passage (**61**) controls fluid flow into both said working stroke chamber (**55**) and said idle stroke chamber (**56**).

4,283,992

SERVO BOOSTERS

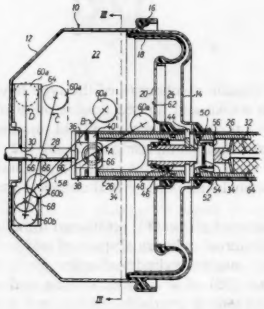
Alexander J. Wilson, Sutton Coldfield, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 29, 1979, Ser. No. 25,064

Claims priority, application United Kingdom, Apr. 8, 1978, 13873/78

Int. Cl.[3] **F15B** *9/10, 13/10*

U.S. Cl. 91—369 B **10 Claims**



1. A servo booster for a vehicle brake system of the type having a housing, a movable wall located within said housing and dividing said housing into two chambers, an input member operably coupled to an actuating pedal and adapted to control the differential pressure across the movable wall, an output member operably associated with said movable wall and axially displaceable by said movable wall through a lever mechanism, said lever mechanism comprising:

(a) at least one first lever;

(b) one end of said first lever being in engagement with a part fixed relative to said housing;

(c) the other end of said first lever being in abutting engagement with said movable wall;

(d) said first lever providing a mechanical advantage between the displacement of the movable wall and the resulting displacement of the output member;

(e) at least one second lever;

(f) means pivotally connecting said second lever to said input member;

(g) means defining a pivotal engagement between said second lever and said output member; and

(h) pivotal support means on said second lever for said first lever;

said pivotal connection, engagement and support means of said second lever with said input and output members and with said first lever, respectively, being arranged that said second lever firstly transmits displacement of the first lever, in response to movement of said movable wall, to the output member and secondly transmits a reaction force to the input member.

4,283,993

SERVO BOOSTER

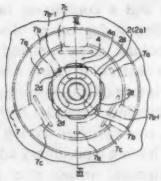
Yoshihiro Hayashida, Chigasaki; Kiyoshi Tateoka, Fujisawa, and Hiromi Ando, Tokyo, all of Japan, assignors to Tokico, Ltd., Kawasaki, Japan

Filed Jan. 15, 1979, Ser. No. 3,774

Claims priority, application Japan, Jan. 20, 1978, 53/5122[U]

Int. Cl.[3] **F15B** *9/10;* **F01B** *19/00;* **F16J** *3/02*

U.S. Cl. 91—376 R **1 Claim**



1. A servo-booster comprising:

a shell casing;

a piston plate and a diaphragm cooperating therewith and extending across said shell casing for defining two chambers therein and for receiving a differential pressure produced between said two chambers, said piston plate having a non-circular opening therethrough;

a cylindrical valve body having therein a valve mechanism for controlling the pressure across the two chambers, said valve body having a head portion with a non-circular configuration at one end thereof, said head portion having a radial shoulder at a location spaced from said one end and facing in the direction toward the other end of said valve body, the configuration of said head portion being the same as that of said non-circular opening in said piston plate and said head portion being insertable through said opening in said piston plate when said head portion is in a predetermined angular relationship with said opening, said valve body and said piston plate being connected with one another by inserting said head portion through said opening in said piston plate and rotating said valve body and piston plate relative to each other for engaging said radial shoulder with said piston plate; and

a retaining plate non-rotatably mounted on said piston plate and having a portion bent out of the plane of said retaining plate, said head portion having a recess therein for engagement by said bent out portion in projection-and-recess engagement when said valve body is rotated relative to said piston plate for holding said piston plate and said valve body in engagement for preventing only relative rotation of said valve body and said piston plate.

4,283,994

POWER BRAKE UNIT

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,763

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834018

Int. Cl.[3] **F15B** *17/02, 13/14, 13/10*

U.S. Cl. 91—391 R **20 Claims**

1. A power brake unit for automotive vehicles comprising:

a housing having a longitudinal axis and a longitudinal bore coaxial of said axis;

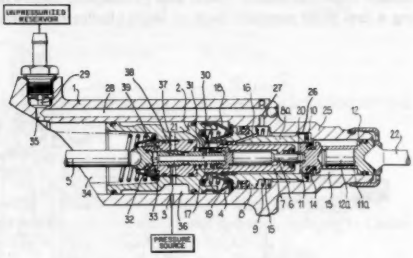
a booster piston disposed in a slidably sealed relation in said bore coaxial of said axis;

an annular piston disposed in a slidably sealed relation in said bore coaxial of said axis having one end thereof spaced from an adjacent end of said booster piston;

a brake valve disposed coaxially of said axis within said

booster piston to meter pressure-transmitting fluid from a pressure source into a booster chamber disposed between said one end of said annular piston and said adjacent end of said booster piston, said fluid in said booster chamber acting on said booster piston in an actuating direction and on said annular piston in a direction opposite said actuating direction;

an input piston connected to a brake pedal disposed in a slidably sealed relation in said bore coaxial of said axis in a spaced relation with the other end of said annular piston; and



an operating piston connected to said brake valve disposed coaxial of said axis within said other end of said annular piston;

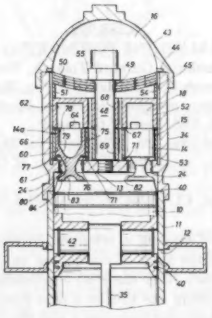
said input piston and said operating piston providing therebetween a hydraulic transmission ratio to reduce actuating travel of said brake pedal when said pressure source is intact, said transmission ratio being ineffective in the event of failure of said pressure source, the diameter of said input piston being greater than the diameter of said operating piston and the diameter of said annular piston being no smaller than the diameter of said input piston.

4,283,995

RECIPROCATING ENGINES

James W. Akkerman, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 31, 1977, Ser. No. 847,276
Int. Cl.³ F01L *21/02, 23/00*
U.S. Cl. 91—410 **5 Claims**



1. In a piston operating engine, a new and improved gas charging valve arrangement comprising:

a cylinder containing a piston reciprocable within said cylinder between top center and bottom center positions, said cylinder having an upper transverse head cap provided with an inlet port including a valve seat disposed about the perimeter of said port;

a high pressure plenum chamber means disposed on the side of said transverse head cap opposite the piston;

means adapted to supply high pressure gas to said plenum chamber means;

fluid communication means including gas valve means movable between open and closed positions for placing high pressure gas in said plenum chamber in communication with said piston and cylinder when in the open position thereby inducing a pressure drop in said plenum chamber, said gas valve means including a valve element having an upper cylindrical stem portion, a reduced diameter portion providing an annular shoulder means for sealingly engaging said valve seat when the gas valve means is in the closed position, and a lower pedestal portion engageable by said piston when at and near its top center position whereby said valve element is lifted by said piston from the valve seat to place said gas valve means in the open position;

pneumatic gas chamber means disposed on the side of said transverse head cap which is opposite the piston, said pneumatic gas chamber means including an upper pneumatic spring body member having a blind bore opening downwardly and a juxtaposed lower valve body member having a guide bore aligned and communicating with said blind bore, said guide bore receiving said cylindrical stem portion of the valve element for sliding movement therein;

a restricted flow passage for communicating high pressure gas between said plenum chamber means and said pneumatic gas chamber means whereby gas pressure in the pneumatic gas chamber means acts on the valve element in opposition to the force exerted on the valve element by said piston,

said flow passage being of sufficiently small dimension to restrict the flow of gas therefrom upon the opening of said gas valve means such that the pressure in said pneumatic gas chamber means drops at a slower rate than the pressure in said plenum chamber on opening of said gas valve means so as to temporarily exceed the plenum chamber pressure for the period when the valve element is moved to open position and at the time the valve element is moved to closed position and the pneumatic gas chamber means thereby acts as a pneumatic spring retaining said valve element in constant contact with said piston and tracking the movement of the piston throughout said period.

4,283,996

HEADER HEIGHT VALVE

Alan D. Jackson; Frank N. Alexander, both of Hutchinson, and Homer R. Graber, Pretty Prairie, all of Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Mar. 12, 1979, Ser. No. 19,815
Int. Cl.³ F15B *11/08, 13/04*
U.S. Cl. 91—447 **10 Claims**

1. A hydraulic valve in a load responsive system supplied by a pressure flow compensated variable displacement pump having a flow compensating means, said valve raising and lowering a header height cylinder under load on a machine, the improvement comprising:

a valve body;

a first bore in the body;

a valve spool means having lands and grooves to control flow to and from the header height cylinder, said spool means positioned in the first bore;

a pump pressure cavity intersecting the first bore and connected to the pump discharge;

first and second motor port cavities intersecting the first bore on opposite sides of the pump cavity with the first motor port cavity connecting to the header height cylinder;

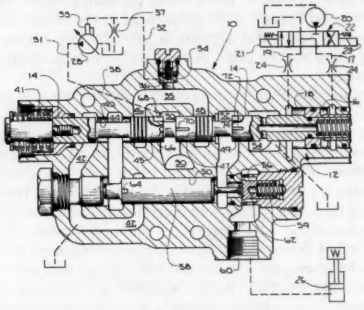
a drain cavity adjacent the first motor port cavity;

a signal passage intersecting the first bore intermediate the pump cavity and each motor port cavity, the signal passage connecting with the flow compensating means of said pump;

a lockout check valve positioned in the first motor port cavity blocking flow from the header height cylinder to the bore;

servo means actuated by pressure in the second motor port cavity acting against the lockout check valve, whereupon pressure in the second motor port cavity actuates the servo means and opens the lockout check allowing backflow into the first bore due to the load on the header height cylinder;

low pressure relief valve means in the second motor port cavity connectible to drain;



the valve spool means having:

a first neutral position, blocking flow to or from the pump cavity and blocking flow to or from the motor port cavities;

a second position of the valve pool, opening the signal passage to the second motor port, and metering the flow from the pump pressure cavity into the signal passage thereby actuating the servo means and passing flow over said relief valve means whereby the flow compensating means of the pump maintains a relatively low pump discharge pressure level; and

a third lowering position of the valve spool metering flow from the first motor port cavity to drain while continuing to meter flow from the pump across the signal passage and over said relief valve means.

4,283,997

REFRIGERANT COMPRESSORS

Haruo Takahashi, Takasaki, and Shougo Kimura, Gunma, both of Japan, assignors to Sankyo Electric Company Limited, Isesaki, Japan

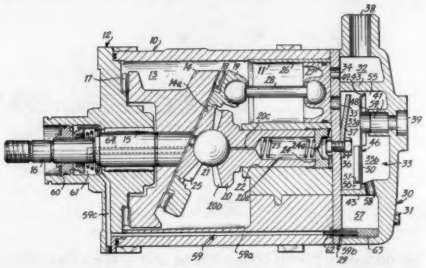
Filed Aug. 16, 1979, Ser. No. 67,012

Claims priority, application Japan, Aug. 22, 1978, 53-101420; Aug. 22, 1978, 53-101421

Int. Cl.[3] **F01B** *31/00;* **F04B** *1/18, 39/04*

U.S. Cl. 92—79 **10 Claims**

1. In a refrigerant compressor unit of the type having a compressor housing, a cylinder block mounted within said compressor housing having a plurality of cylinders, a plurality of piston means slidably disposed within said plurality of cylinders, means for driving said piston means within said cylinders to compress refrigerant gas, said compressor housing having a first chamber adjacent said cylinder block for containing said driving means, a cylinder head having a suction chamber and a discharge chamber which operatively communicate with said cylinders, and a gas passageway communicating between said first chamber and said suction chamber to return blow-by gas in said first chamber to said suction chamber, the improvement comprising: said cylinder head being provided with a second chamber at a lower portion thereof, means for communicating said second chamber with said discharge chamber, an oil passageway communicating between said first chamber and said second chamber, partitioning means fixedly disposed within said discharge chamber to separate said discharge chamber into a first and a second spaces, said first space being a front portion of said discharge chamber and communicating with said cylinders, said second space being a rear portion of said discharge chamber and communicating with said second chamber, said partitioning means being shorter than the inner wall of said discharge chamber at the upper portion thereof to define a first gap therebetween along the inner wall of said discharge chamber through which gap said first space communicates with said second space, said partitioning means including a first plate member fixed to said cylinder head and with



conduit means connecting said first space with an outlet port of said cylinder head to be connected with an external cooling circuit, a guide wall extending along the inner surface of said discharge chamber at the lower peripheral portion of said plate member and axially projecting within said first space to define a groove along the inner surface of said discharge chamber, opposite ends of said groove connecting with said first gap, whereby the oil flowing on the inner surface of said first space may be transferred to said second space directly through said first gap and/or through said first gap after flowing in and along said groove by the compressed gas flow to said conduit, and whereby the oil separated from the compressed gas within said second space may be accumulated in said second chamber and be returned to said first chamber through said oil passageway.

4,283,998

METHOD AND MACHINE FOR MAKING A FILTER ROD

Heinz Greve, Hamburg; Gerhard Tolasch, Wentorf; Uwe Heitmann, Schwarzenbek, and Günter Wahle, Reinbek, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,042

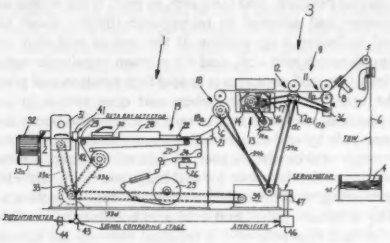
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815025

Int. Cl.[3] **A24C** *5/56;* **A24D** *3/02*

U.S. Cl. 493—4 **14 Claims**

1. A method of making a wrapped homogeneous rod-like filler, comprising the steps of conveying an elongated tow of crimped filamentary filter material lengthwise along an elongated path; stretching the tow in a first portion of said path; converting the stretched tow into a rod-like filler in a second portion of said path; draping the filler into a web of wrapping material in a third portion of said path; measuring the mass of successive increments of the wrapped filler and generating signals each having a characteristic denoting the measured mass of such increments; and utilizing said signals to change

the rate of transport of the tow to said second portion of said path, while maintaining the stretching action at an at least



substantially constant value, when said characteristic of said signals deviates from a predetermined value.

4,283,999

PAINT SPRAY BOOTH WITH WATER CURTAIN

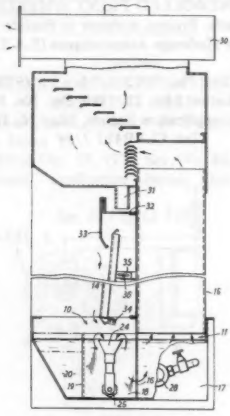
Thomas J. Kearney, Malvern Wells, England, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Mar. 7, 1980, Ser. No. 128,249

Claims priority, application United Kingdom, Mar. 9, 1979, 08386/79

Int. Cl.³ F23J *11/00*

U.S. Cl. 98—115 SB **7 Claims**



1. In a paint spraying booth having a back wall over which a water curtain flows to collect sprayed paint, a tank to receive the water curtain, vertical entrainment ducts disposed above the rear part of the tank, means for generating a flow of air through said ducts to lift water from the tank for the formation of the water curtain, and a surface baffle dividing the rear part of the tank from the water surface in a front part of the tank into which the curtain falls, the improvement comprising a vertically-disposed wall separating the front and rear parts of the tank and extending from the bottom of the tank to form said surface baffle, one or more transfer openings in said wall below the water level, and baffle plates in the front part of the tank extending above the water level and defining a region adjacent the back wall of the booth to receive the water curtain, said baffle plates preventing direct flow of water from said region to a transfer opening whereby the water is constrained to flow to a remote zone of the front part of the tank before returning to the transfer opening or openings.

4,284,000

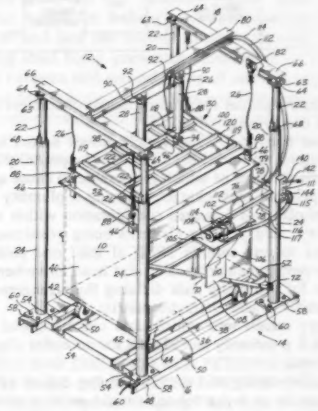
MATERIAL COMPACTING APPARATUS

Benjamin M. Almeda, Jr., 3415 24th Ave., West, Seattle, Wash. 98199

Filed Mar. 24, 1980, Ser. No. 132,882

Int. Cl.³ B30B *15/06*

U.S. Cl. 100—229 A **35 Claims**



1. A compacting apparatus for use with a container having a charging opening for receiving material to be compacted therein, said compacting apparatus comprising:

a collapsible frame structure having a stationary base section, a movable section spaced away from the container, and means for interconnecting said stationary and movable sections to permit said movable section to shift toward and away from the container from an initial position collapsed relative to said frame base section;

pressing means disposed between said frame movable section and the container, said pressing means sized to slidably pass through the container charging opening;

extend-retract means interconnecting said frame movable section with said pressing means to power said pressing means between a compacting mode forcing said pressing means into the container to compact the material located therein, and a retracting mode retracting said pressing means to a position spaced away from the container charging opening;

connection means mounted on the container;

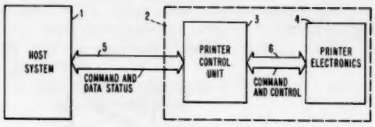
flexible lines interconnecting said frame movable section with said container connection means;

wherein during the compacting mode said frame movable section is free to shift away from said frame base section and the container in response to the reaction force generated by said pressing means pressing against the material within the container, until said lines are taut whereupon said lines align the container with said pressing means and transmit the compaction force exerted on the container, by said pressing means, back to said frame movable sections, and during the retracting mode said lines are relaxed and said frame movable section is in collapsed position relative to said frame base section.

4,284,001
HEAD IMAGE GENERATOR FOR A MATRIX PRINTER

Kyriakos L. Leontiades, Boca Raton, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,493
Int. Cl.³ B41J 3/12
U.S. Cl. 101—93.05 **31 Claims**



1. A matrix printer for printing matrix characters on a record medium comprising:

at least one print head which moves across said record medium, said print head including a plurality of printing elements, each of which is operable to cause a symbol to be printed, each character having a plurality of printed symbols in an arranged configuration within a character matrix, said printing elements being positioned with respect to one another along at least one path which is non-perpendicular to said print head movement;

means for providing data defining the arrangement of said symbols in said character matrix;

memory means into which data can be stored and from which previously stored data for an entire character can be read;

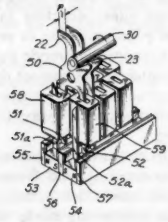
means for storing said symbol defining data in said memory means in an order related to said printing element positioning; and

means for reading the data stored in said memory means in one of a column or row order and for providing said read data to operate said printing elements.

4,284,002
CHARACTER-SELECTING MECHANISM FOR A PRINTER

Tadayoshi Shimodaira, and Yoshihiro Mitsui, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha and Shinsu Seiki Kabushiki Kaisha, both of Tokyo, Japan

Continuation-in-part of Ser. No. 819,520, Jul. 27, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,829
Claims priority, application Japan, Jul. 27, 1976, 51-89482; Jan. 28, 1977, 52-8453
Int. Cl.³ B41J 1/28
U.S. Cl. 101—99 **8 Claims**

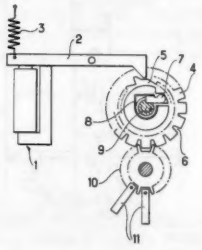


1. An improvement in a printer mechanism for selecting for printing a character on a moving character support, said mechanism including an electromagnet coil having a core passage therethrough, a ratchet connected with said character support for controlling the movement thereof, wherein said improvement comprises a permanent magnet having a spaced-apart north and south poles generating a magnetic field, a shaft, a core member mounted on said shaft for rotation between first and second positions, said core member having a core arm of a ferromagnetic material and a pawl extending from said shaft in a direction substantially opposed to said core arm and including a pawl for engaging said ratchet when said core member is in said second position, said core arm, in part, lying within said core passage and adapted to reciprocate therein about said shaft and including a tip portion at the end of said core arm extending through said coil, said tip portion proximate one of said poles when said core arm is in said first position and proximate the other of said poles when said core arm is in said second position, said core arm in said first position being held to said one pole by said magnetic field in the absence of current flow through said electromagnet, and in said second position being held to said other pole by said magnetic field, said electromagnet being so connectable electrically that on activation thereof by a current pulse, said core arm becomes of the same polarity as said one pole and is repelled thereby for moving said arm toward and into engagement with the other of said poles, and for thereby engaging said pawl with said ratchet, and mechanical reset means for returning said core arm and core member to said first position and disengaging said pawl from said ratchet, and wherein said core member has a side arm of a ferromagnetic material extending from said core member at the region of said shaft in the direction of said core arm and further comprising a second permanent magnet disposed proximate the tip region of said side arm for attracting said side arm for pivoting said core member about said shaft from said first to said second position on activation of said electromagnet by a current pulse.

4,284,003
PRINTER WITH A PLURALITY OF ELECTRICALLY CONTROLLED PRINT WHEELS

Marcel Tollet, Paris, France, assignor to Societe pour l'Affranchissemert et le Timbrage Automatiques (S.A.T.A.S.), Clichy, France

Continuation of Ser. No. 906,303, May 15, 1978, abandoned. This application May 12, 1980, Ser. No. 148,073
Claims priority, application France, May 16, 1977, 77 14896
Int. Cl.³ B41J 1/44
U.S. Cl. 101—99 **1 Claim**



1. A printer having a plurality of electrically controlled print wheels, means for driving said print wheels by a drive shaft rotating alternately in a drive direction and then in a return direction and for pausing for printing between the movements in opposite directions, each of said print wheels having typographical characters on its periphery and each being associated with a ratchet wheel having teeth on its periphery, a stop lever for each ratchet wheel and engageable with a tooth thereof, an electromagnet for each stop lever for effecting disengagement of the stop lever from the teeth of an associated ratchet wheel, means for supplying an electronic signal representative of the value displayed when the angular movement of the drive shaft corresponds to the value to be displayed to said electromagnet for causing an associated stop lever to engage the teeth of an associated ratchet wheel, a check wheel for each print wheel, means for uncoupling said shaft from said ratchet wheel to separate the drive shaft from said print wheel subsequent to

engagement of said stop lever with a tooth of said associated ratchet wheel, electronic means for counting the number of positions through which each of said print wheels rotates between a starting position and a stopping position to validate the position of a print wheel set by a stop lever by comparison of each print wheel actual position with its intended position, said electronic means for validating the position of said print wheels including: an input memory, at least one photo-electronic detector which detects the number of positions passed through by a check wheel driven by said print wheel, an electronic counter connected to said at least one photo-electronic detector for receiving signals responsive to the number of positions passed through by said check wheel, a comparator for comparing digital data corresponding to check wheel movement with data from said input memory, the identity of the two sets of data resulting in a logic signal, means for deriving an end of rotation signal from said drive shaft, and an AND gate for combining said logic signal from said comparator with said end of rotation signal to provide an output signal from said AND gate for use in validating the position of the print wheel prior to printing, a keyboard for providing a binary value input signal to said input memory corresponding to the required stop position for each print wheel, a down counter, means for supplying a cycle start pulse to said down counter, said means for sensing the position of said drive shaft comprising means for supplying signals to said down counter for decrementing said down counter at each position of said drive shaft, a bistable having its input connected to said means for providing said cycle start pulse and to the output of said down counter and its output connected to said electromagnet to de-energize said electromagnet and immobilize the print wheel, and said means for supplying a cycle start pulse being connected to said electronic counter to provide a reset to zero input to said counter which is incremented by one unit per pulse from said at least one photo-electronic detector.

4,284,004

TYPE CHARACTER SELECTING MECHANISM FOR PRINTING HEAD

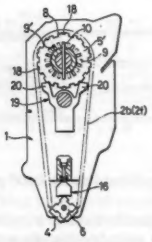
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

Filed Oct. 18, 1979, Ser. No. 86,056

Claims priority, application Japan, Oct. 20, 1978, 53-143339[U]

Int. Cl.³ B41J *1/20*

U.S. Cl. 101—111 **15 Claims**



1. A type character selecting mechanism for a printing head including a plurality of printing elements juxtaposed to one another and each bearing a series of type characters on its outer surface comprising: a plurality of annular selecting gears, one for each of said plurality of printing elements, substantially coaxially juxtaposed to one another and rotatable about their common axis with the printing elements of said printing head, respectively; coaxially aligned holes defined in said selecting gears; each of said selecting gear holes defining an inner side of said gear and each said inner side having a plurality of equidistantly spaced internal teeth;

a selecting shaft slidable through said coaxial holes of said selecting gears and rotatable about its axis, said shaft having thereon a locking member which is positioned and sized to engage with and which engages the internal teeth of one of said selecting gears, whereby rotation of said selecting shaft rotates the said gear then engaged by said locking member;

a first of said selecting gears having a first rotative orientation, at which its said internal teeth are axially aligned with the said internal teeth of a second group of said selecting gears, and having a second rotative orientation, at which its said internal teeth are angularly displaced from the said internal teeth of said second group of said selecting gears; and

positioning means for locking said first selecting gear at either of said first and second rotative orientations; said selecting shaft being prevented from being erroneously moved between said second group of said selecting gears and said first selecting gear unless said first gear is at said first rotative orientation and said internal teeth of the two adjacent said selecting gears, including said first gear and the adjacent said gear of said second group, are aligned.

4,284,005

APPARATUS FOR THE METERED FEEDING OF INK TO A DUCTOR ROLL OF AN OFFSET PRINTING DEVICE

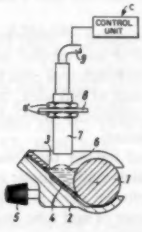
Reinhold Weigele, Korntal; Wolfgang Pfeil, Kornwestheim, and Horst Purr, Tennenbronn, all of Fed. Rep. of Germany, assignors to Develop Dr. Eisbein GmbH & Co., Gerlingen, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 18,918

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811276

Int. Cl.³ B41F *31/08*

U.S. Cl. 101—363 **11 Claims**



1. An apparatus for metered feeding of ink to a revolvable ductor roll adapted to be dipped in an ink pool comprising:

pump means for supplying a metered amount of ink to said ink pool;

capacitive proximity sensor means for monitoring a level of ink in the ink pool and for providing a control signal to the pump means;

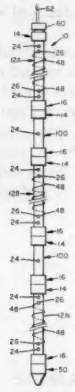
control means including timer means for delaying a delivery of said control signal from said capacitive proximity sensor means to said pump means until a predetermined time after the ductor roll begins a revolution;

wherein the capactive proximity sensor means is associated with an area of said ink bath where an ink bead forms upon revolution of the ductor roll, whereby a predetermined amount of ink is metered into said ink pool upon receipt of said control signal by said pump means.

4,284,006
LINEAR EXPLOSIVE CHARGE WITH CONSTANT DETONATION VELOCITY AND SYNCHRONOUS BOOSTER CHARGES

Dallas R. Davis, Tulsa, Okla., assignor to Davis Explosive Sources, Inc., Tulsa, Okla.

Filed Aug. 13, 1979, Ser. No. 65,894
Int. Cl.³ C06C *11/00*
U.S. Cl. 102—317 **12 Claims**



1. A linear explosive charge with constant detonation velocity, comprising;

(a) a plurality of series-connected units, or sticks, and means to colinearly join said sticks together in a long linear substantially rigid assembly;

(b) each stick comprising;

(1) a tubular member of selected length and diameter;

(2) a polarized coupling attached at each end, a female coupling at one end, and a male coupling at the other end;

(3) a helical winding of linear explosive cord on the outside surface of said tubular member, near each end of said stick, said explosive cord inserted through an opening in the wall of said stick, with the ends of said cord extending outwardly through said couplings for selected distances;

(4) at the end having the female coupling, a selected length of thick-walled elastic tube inserted over the end of said explosive cord into the end of said stick; the inner diameter of said tube less than twice the diameter of said explosive cord;

whereby when the end of said cord extending from the male end of a first stick is inserted into said elastic tube inside the female coupling of a second stick, as the joint is made up, said elastic tube will expand and press both ends of the explosive cord together in tight side-by-side contact to facilitate the process of cross-detonation from the cord on one stick to the cord on the other stick, and

(c) at least one separate booster explosive charge unit, having a female and male coupling on the first and second ends, respectively, identical to those on said sticks;

whereby said booster explosive charge unit can be coupled between a selected pair of sticks; and including

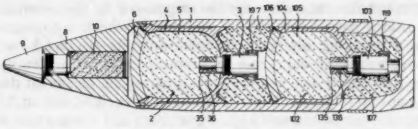
(d) means to detonate said booster explosive charge by the detonation of the explosive cord extending from the male coupling of the stick coupled into its female coupling;

(e) from the detonation of said booster charge, means to detonate the explosive cord in the female coupling of the stick coupled to the male coupling of said booster charge.

4,284,007
PROJECTILE WITH AT LEAST ONE EXPELLABLE SUBPROJECTILE

Claes G. Arnell, Torshälla, and Erik G. Olsson, Eskilstuna, both of Sweden, assignors to Förenade Fabriksverken, Eskilstuna, Sweden

Filed Mar. 2, 1979, Ser. No. 17,074
Claims priority, application Sweden, Jan. 23, 1979, 7900596
Int. Cl.³ F42B *13/50*
U.S. Cl. 102—477 **3 Claims**

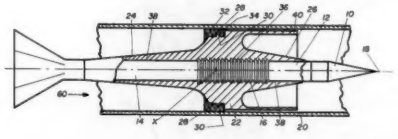


1. A projectile including a fuze for sensing a predetermined position in the trajectory of the projectile, a nose element, first expelling means for discarding the nose element in response to said sensing of said predetermined position in the trajectory of said projectile, at least one subprojectile, and second expelling means for expelling said at least one subprojectile from the projectile, said projectile further comprising deceleration-sensing means for sensing a predetermined first level of deceleration forces which affect the projectile as a consequence of said discarding of the nose element, and initiation means responsive to the sensing of said first level of the deceleration forces for actuating the second expelling means to expel the subprojectile.

4,284,008
DOUBLE RAMP DISCARDING SABOT

Richard D. Kirkendall, Havre de Grace; William H. Drysdale, Aberdeen; Louise D. Kokinakis, Fallston, and Bruce P. Burns, Harford County, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1979, Ser. No. 29,188
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—521 **3 Claims**



1. A double ramp discarding saboted projectile which comprises:

a sub-caliber projectile having a cylindrically shaped fore body section, a cylindrically shaped aft body section, an externally grooved central body section disposed intermediate said fore and aft body sections, and a longitudinal axis;

a gun tube having a longitudinal axis in axial alignment with said longitudinal axis of said saboted projectile, said gun tube adapted for slidably supporting said saboted projectile therein during launch;

sabot means operatively connected to said sub-caliber projectile for preventing premature propellant gas leakage through said sabot means and through interface surfaces between said sabot means and said sub-caliber projectile, for propelling said saboted projectile through said gun tube with increased velocity, for obtaining uniform shear traction between the interface of said sabot means and said

sub-caliber projectile, and for initial guidance of said saboted projectile through said gun tube which includes;

a plurality of double ramp sabot segments, each of said segments having an aft tapered ramp section having an internal cylindrical interface surface which mates with said aft body section of said sub-caliber projectile, a forward tapered ramp section having an internal cylindrical interface surface which mates with said forward body section of said sub-caliber projectile, an internally concentric traction groove section which mates with said groove central body section of said sub-caliber projectile, and borerider means for performing initial guidance during early motion of said sub-caliber projectile through said gun tube, wherein said aft and forward tapered ramp segment includes sabot segments having taper profiles designed to give an axially uniform load transfer between said interface surfaces;

an obturating band seat disposed intermediate said aft and said forward ramp sections, said obturating band seat having an annular band locking projection thereon;

a thin cylindrically shaped skirt arcuately extending over said forward tapered ramp section; and

obturating band means fixedly connected to said sabot means and slidably disposed intermediate said sabot means and said gun tube, said band means positioned over the total in-bore center of gravity of said saboted projectile, for reducing the magnitude of transverse moments applied to said saboted projectile by yawing motions, for balancing said saboted projectile during in-bore travel through said gun tube, and for preventing leakage of propellant gases between said sabot means and said gun tube, said sabot means and said band means cooperating to eject said sub-caliber projectile from said gun tube with improved leathality and range.

4,284,009

MOTORIZED RAILWAY VEHICLE TRACK WORKING MACHINE AND METHOD OF OPERATION

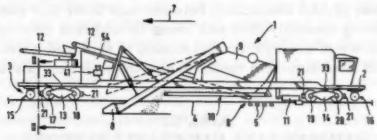
Josef Theurer, Vienna, and Karl Fölser, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed May 17, 1979, Ser. No. 39,880

Claims priority, application Austria, Jul. 19, 1978, 5248/78

Int. Cl.³ B61B *15/14;* B61F *13/00;* E01B *27/04*

U.S. Cl. 104—7 R **8 Claims**



1. A heavy self-propelled track working machine comprising a frame, track working equipment carried by the frame and subjecting the frame to a load, and an undercarriage arrangement which comprises a plurality of main undercarriages supporting the frame for mobility on the track, each main undercarriage being constituted by a swivel truck having two driven axles each having two wheels engaging the track rails to propel the machine, the load being transmitted from the frame to the track by the axles and wheels of the main undercarriages, an auxiliary undercarriage associated with each main undercarriage and arranged adjacent thereto, each auxiliary undercarriage including a dead axle with two wheels arranged to engage the track rails under a selected pressure, an adjustment drive connected to each auxiliary undercarriage for moving the auxiliary undercarriage for engagement of the wheels of the dead axle with the track rails under the selected pressure whereby diminishing and increasing variations of the load are transmitted to the track by the dead axles and wheels of the auxiliary undercarriages in dependence of the movement of the auxiliary undercarriages into the selected engagement and the load transmitted by the associated main undercarriages is correspondingly increased and diminished, and a control for each adjustment drive for selective actuation thereof to effectuate the engagement of the wheels under the selected pressure.

7. A method of operating a heavy self-propelled track working machine comprising a frame, track working equipment carried by the frame and subjecting the frame to a load, and an undercarriage arrangement which comprises a plurality of main carriages supporting the frame for mobility on the track, each main undercarriage being constituted by a swivel truck having two driven axles each having two wheels engaging the track rails to propel the machine, the load being transmitted from the frame to the track by the axles and wheels of the main undercarriages, and an auxiliary undercarriage associated with each main carriage and arranged adjacent thereto, each auxiliary undercarriage including a dead axle with two wheels arranged to engage the track rails under a selected pressure, which method comprises the steps of propelling the machine selectively in high-speed drive and in low-speed drive, adjusting each auxiliary undercarriage for moving the auxiliary undercarriage for engagement of the wheels of the dead axle with the track rails under the selected pressure in dependence on the drive, and controlling the adjustment movement so as to effectuate the engagement in high-speed drive to transmit portions of the load to the track by the dead axles and correspondingly to decrease the load transmitted to the track by the main undercarriages while effectuating disengagement in low-speed drive and correspondingly to transmit the entire load to the track by the main undercarriages whereby traction is increased.

4,284,010

CONVEYANCE SYSTEM

Rolf F. Marshall, Huntington, N.Y., assignor to The Port Authority of New York and New Jersey, New York, N.Y.

Continuation-in-part of Ser. No. 814,845, Jul. 11, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,757

Int. Cl.³ B60L *9/00*

U.S. Cl. 104—292 **10 Claims**

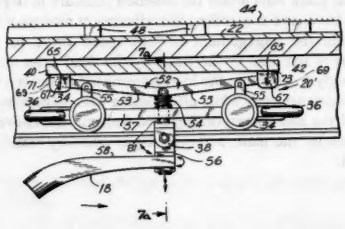
1. A conveyance system comprising:

an overhead guide rail;

one or more vehicles each having a separate and independent guiding member engaging the guide rail for guiding the vehicle along a predetermined path of travel defined by the guide rail, at least a platform for carrying a load, wheel means for partially supporting the platform on an underlying surface, and a relatively rigid member interconnecting the platform and guiding member, the interconnecting member including a substantially vertical rigid section fixedly secured to the platform and a generally horizontal section connected to the guiding member for completing the support of the vehicle with the guiding member on the guide rail, the platform, interconnecting member and guiding member being dimensioned such that successive vehicles in the system first engage each other at their guiding members, the interconnecting member comprising an energy-absorbing compressible section for cushioning the load from the impact of such engagement; and

propulsion means for moving the vehicle, said propulsion means including a continuous stator of a linear induction

motor mounted on and extending along the length of the guide rail and an independent rotor of the linear induction



motor in the guiding member of each of said vehicles for independently propelling the vehicles along the guide rail.

4,284,011

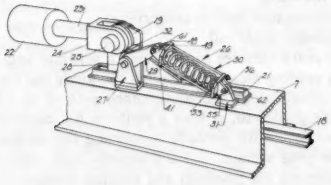
RESTRAINT ASSEMBLY FOR THE HOPPER DOOR ACTUATOR OF A RAPID DISCHARGING RAILROAD HOPPER CAR

Joseph Eagle, Hebron, Ky., assignor to Ortner Freight Car Company, Cincinnati, Ohio

Filed Mar. 10, 1980, Ser. No. 128,548

Int. Cl.[3] B61D *7/02, 7/26, 7/28*

U.S. Cl. 105—310 **8 Claims**



6. In a railroad hopper car of the type having a longitudinal center sill of substantially inverted U-shape, a plurality of hopper doors arranged in opposed pairs and swingable between a closed position and a downwardly depending open position, and door-means comprising a fluid operated cylinder mounted above said center sill and a door-actuating beam mounted beneath said center sill, operatively connected to said hopper doors, and having an upwardly directed extension passing through a longitudinal slot in the upper surface of said center sill, said cylinder having a piston rod connected to said door-actuating beam extension above said center sill, said piston rod and said door-actuating beam being longitudinally shiftable by said cylinder between a retracted door-closing position and an extended door-opening position, the improvement comprising a restraint assembly for said door actuating means to prevent unintentional shifting of said piston rod and said door-actuating beam from said retracted door-closing position to said extended door-opening position due to inertia, said restraint assembly comprising a first bracket mounted on the upper surface of said center sill, a shaft rotatively mounted in said bracket and extending transversely of said center sill, a lever non-rotatively mounted on said shaft, a spring assembly having first and second ends, said lever having a free end pivotally joined to said first end of said spring assembly, a second bracket affixed to the upper surface of said center sill, said second end of said spring assembly being pivotally mounted to said second bracket, the distance between said shaft and said pivotal mounting of said second end of said spring assembly being less than the combined length of said lever and said spring assembly in extended condition, one end of said shaft extending beyond said first bracket and having a notch formed therein, said notch having first and second sides constituting first and second abutment surfaces, said door actuating beam extension having a laterally extending lug mounted thereon said pivotal attachment of said free end of said lever and said first end of said spring assembly lying in a first over-center position above an imaginary line drawn between the axial center of said shaft and the center of said pivotal mounting of said second end of said spring assembly when said restraint assembly is in its restraining condition and said piston rod and door-actuating beam are in their retracted door-closing position, said lug on said door-actuating beam extension being so positioned as to contact said first abutment surface of said notch to prevent longitudinal shifting of said door-actuating beam to open said hopper doors due to inertia, said shaft being rotatable by said abutment of said lug and said first abutment surface when said piston rod is shifted by said cylinder toward said door-opening position to rotate said lever against the action of said spring assembly until said pivotal connection between said free end of said lever and said first end of said spring assembly passes to a second over-center position below said imaginary line and said restraint assembly achieves a non-restraining condition wherein said first abutment surface of said shaft notch is no longer in position to be abutted by said door-actuating means lug and said door-actuating means is free to shift to its door-opening position, said door-actuating means lug being so positioned as to engage said second abutment surface of said shaft notch to rotate said shaft and return said restraint assembly to its restraining condition with said pivotal connection between said lever free end and said spring assembly first end being in said first over-center position when said cylinder is actuated to shift said piston rod and said door-actuating means to said door-closing position.

4,284,012

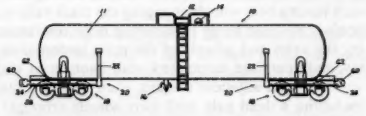
RAILWAY TANK CAR CRADLE SUPPORT

John A. Hrinsin, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed May 31, 1979, Ser. No. 44,783

Int. Cl.[3] B61D *5/06;* **B61F** *1/00, 1/14*

U.S. Cl. 105—362 **7 Claims**



1. A tank car stub sill support structure comprising: a stub center sill located at each end of the car and extending inboard of a body bolster extending transversely of the car and engaging said stub sill; coupler means located within each stub sill; a half ring attached to each said stub center sill at its inner end, each said half ring including a curved top cover plate which

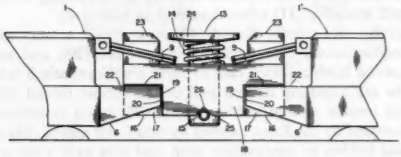
engages the lower portion of the tank, and a curved lower cover plate vertically spaced below the top cover plate; a vertical web joining the top cover plate and the bottom cover plate; said stub sill engaging said top cover plate, said bottom cover plate and said vertical web; the height of the vertical web and the distance between the top cover plate and the bottom cover plate varying in a substantially continuous decreasing manner from said stub sill to the area of intersection of said plates in accordance with the bending moment applied to the ring by the tank and lading in the car; said stub sill connected only to said body bolster and said half ring whereby coupler impact loads are transmitted into said stub sill and from said stub center sill into said body bolster and into said ring and into the upper cover plate and into the tank substantially entirely in shear.

4,284,013

PALLET COUPLING APPARATUS

Robert W. Davidson, Virginia Beach, Va., assignor to CFE Air Cargo, Inc., Norfolk, Va.

Filed Feb. 8, 1979, Ser. No. 10,503
Int. Cl.³ A47B *35/00*
U.S. Cl. 108—50 **8 Claims**



1. In a coupling apparatus for releasably interconnecting cargo pallets to form trains thereof for movement along and transfer between conveyerized apparatus, said pallets being provided with frame members comprising a ledge portion and an upper edge portion, said ledge portion being provided with a plurality of spaced apart rectangular recesses each having a pair of vertically disposed, inwardly facing abutting surfaces formed therein, said upper edge portion being provided with hingedly mounted securing rings in coacting arrangement with said rectangular recesses, said coupling apparatus being provided with spacing means adapted to abut the facing outer edges of the ledge portions of said tandemly arranged pallets, horizontally disposed resting surfaces adapted to overlie portions of the ledge portion of said pallets and longitudinally arranged, upwardly extending lugs adapted to be engaged by the securing rings of said tandemly arranged pallets to effect the coupling thereof, the improvements comprising oppositely extending projections to coactively engage the said pairs of vertically disposed, inwardly facing abutting surfaces of the said recesses of adjacent, tandemly arranged pallets, the said engagement being operative to prevent lateral displacement of the said pallets one from the other, and locking means adapted to coact with said upwardly extending lugs, said coaction being operable to prevent disengagement of said securing rings under all conditions encountered during the said movement and transfer of the said pallet trains.

4,284,014

FLOOR SAFE

Charles J. Kuhn, 10520 Plainview Ave., Tujunga, Calif. 91042

Filed Mar. 30, 1979, Ser. No. 25,376
Int. Cl.³ E05G *1/02*
U.S. Cl. 109—50 **8 Claims**

1. A safe assembly adapted to be received within an opening of a specified diameter formed within a rigid wall or floor and immovably retained therein comprising:

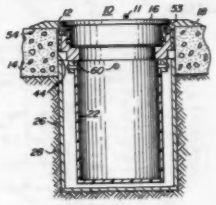
a first sleeve having an axially extended tapered portion on its outer surface wherein one outer end of said first sleeve is of a first diameter and the other outer end is of a second and larger diameter, said second diameter being smaller than the receiving floor or wall opening;

a container for storing deposited items within the safe assembly;

means connecting the container to the first sleeve;

a second sleeve having an inner diameter larger than the first diameter of the first sleeve but smaller than the second diameter of the first sleeve and being at least partially deformable; and

locking closure means removably secured to the first sleeve for selectively enclosing the storage container of the assembly;



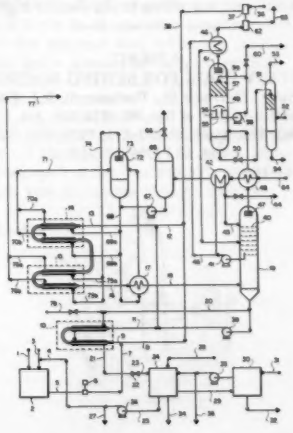
and the first sleeve upon installation in the opening of a rigid wall or floor, engaging the second sleeve and radially expanding at least a portion of the second sleeve into rigid, essentially immovable engagement with the wall or floor surface bordering the opening within which the assembly is adapted to be placed and in a manner such that the application of extracting forces to any portions of the assembly exposed above such an opening will tend to increase the radially expansive forces upon the second sleeve in the opening thereby still further increasing the engagement forces between the first and second sleeves and the opening bordering surface and resisting extraction from the opening.

4,284,015

POLLUTION-FREE COAL COMBUSTION PROCESS

Norman L. Dickinson, 16230 Greenwood La., Monte Sereno, Calif. 95030

Filed Mar. 26, 1979, Ser. No. 23,606
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **9 Claims**



1. A combustion process in which a sulfur-containing fuel is

burned in a combustion zone to which it is charged as a slurry in sulfuric acid solution.

4,284,016

MULTIPLE PATTERN SEWING MACHINE

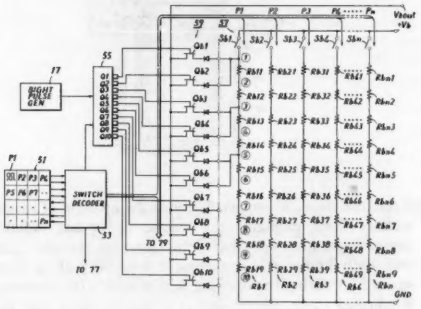
Nobuyoshi Matumura, Yao, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 948,158, Oct. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 913,592, Jun. 8, 1978, abandoned. This application Aug. 10, 1979, Ser. No. 65,518

Claims priority, application Japan, Jun. 27, 1977, 52-76896; Oct. 12, 1977, 52-122719; Oct. 12, 1977, 52-122720

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **23 Claims**



1. In a multiple pattern sewing machine, means for controlling the feed amount or bight coordinate position in accordance with the amplitude of the signal applied thereto, means for providing a pattern of signal amplitudes to said controlling means to produce a predetermined feed or bight pattern, said pattern signal providing means including means for supplying a plurality of predetermined signals of different amplitudes, a plurality of means for selectively coupling respective ones of said signal amplitudes to said controlling means, each signal amplitude producing a predetermined coordinate position in said feed or bight pattern, means for generating a timing signal for each stitch in the pattern, and a counter stepped in response to said timing signal and having a maximum count equal to the number of stitches in the pattern, the outputs of said counter being coupled to respective coupling means to thereby actuate the same in an order according to the feed or bight pattern.

4,284,017

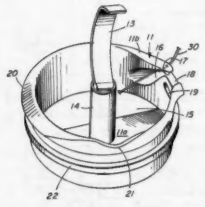
ROTARY HOOK FOR SEWING MACHINE

Wayne E. Starr, 71 Water St., Portsmouth, R.I. 02874

Continuation-in-part of Ser. No. 924,141, Jul. 13, 1978, abandoned. This application Jul. 1, 1979, Ser. No. 52,793

Int. Cl.³ D05B *57/08*

U.S. Cl. 112—181 **4 Claims**



1. A bobbin assembly for a single needle lockstitch sewing machine having a rotary driving shaft; said assembly being engagable with a rotary hook (**23**); said rotary hook (**23**) being mountable one said shaft; said assembly comprising a bobbin holder (**11**) mounted on said hook (**23**) for rotational movement of said hook relative thereto and having a bottom wall (**11*a***) and a bobbin (**12**) having a convexly curved outer end plate (**12*a***) and a flat inner end plate (**12*b***) seated within said holder (**11**) with said flat end plate (**12*b***) being against said bottom wall **11*a***;

(a) said holder (**11**) having a needle opening (**19**), an opening (**18**) for positioning said holder (**11**) on the sewing machine positioner (**41**), a relatively wide undergroove (**16**) spaced adjacent said opening (**18**), a beveled surface (**20**), a bobbin post (**14**) on which said bobbin (**12**) is mounted, and means (**13**) for applying force axially on a said bobbin so as to drive and maintain said flat bobbin end plate (**12*b***) in frictional contact with said bottom wall (**11*a***); a bobbin thread (**30**) passing without obstruction from said bobbin (**12**) to contact said undergroove (**16**) and pass therefrom outwardly of said holder (**11**).

(b) said bobbin (**12**) being freely rotatable on said bobbin post (**14**); said convexly curved outer end plate (**12*a***) directly contacting and supporting needle thread (**40**) when said needle thread (**40**) is looped around said holder (**11**); said bobbin being characterized as being self-threading within said assembly (**11**) when mounted on said post;

whereby said needle thread (**40**) is wrapped aroung said bobbin holder (**11**), said beveled surface (**20**), and said curved bobbin plate (**12*a***) to form a uniform stitch with the self-adjusting tension pull of the bobbin thread (**30**); the tension of said bobbin thread (**30**) being maintained constant by the force exerted by said force means (**13**) on said bobbin in conjunction with said relatively wide undergroove (**16**).

4,284,018

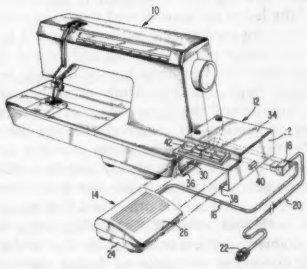
CONVERSION ASSEMBLY FOR SEWING MACHINE SPEED CONTROLLER

Jan Szostak, Lincroft, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 2, 1979, Ser. No. 90,714

Int. Cl.³ D05B *69/00*

U.S. Cl. 112—217.4 **7 Claims**



1. An assembly for converting a sewing machine speed controller of the foot operated type to hand operation thereof, the amount of compression of said controller determining the speed of said sewing machine, said assembly comprising:

a housing for slidably accepting said speed controller therein and adapted to be mounted on the sewing machine, said housing including a front wall, a rear wall, a top wall and a lower support for said controller;

hand operable speed setting means mounted on the top wall of said housing and accessible to an operator for allowing an operator to manipulate said setting means to a specific condition so as to set a desired speed for said sewing machine and for maintaining the set condition; and

actuator means coupled to said speed setting means and responsive to a set condition thereof for controlling the compression of said controller.

4,284,019

LUBRICANT SEALING DEVICE FOR SEWING MACHINES

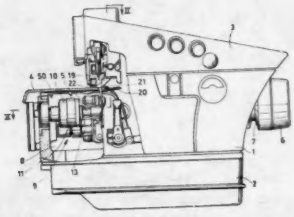
Franco Marchesi, Via S. Giovanni Bosco 17, Pavia, Italy

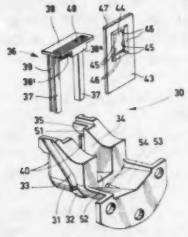
Filed Jul. 24, 1980, Ser. No. 171,879

Claims priority, application Italy, Sep. 7, 1979, 25529 A/79

Int. Cl.³ D05B *71/00*

U.S. Cl. 112—256 **10 Claims**





1. A lubricant sealing device for the slide members which actuate the feed dogs in a sewing machine of the type having a housing with a lubricating chamber containing driving elements for the slide members and from which the latter extend to support the feed dogs in the machine's sewing zone, said sealing device comprising:

(a) a support bracket **(31)** mounted in the housing having an inner end communicating with the lubricating chamber and extending from the latter in the direction of the sewing zone, which includes:

(i) a channel **(34)** through which the slide members extend and guided for alternating vertical and horizontal movement by the driving elements; and

(ii) means defining a recess **(35)** extending from said channel **(34)** to said inner end;

(b) a sealing element **(43)** having lubricant scraping surfaces formed by spaced walls defining an opening **(44)** of a size conforming to the cross sectional configuration of the slide members and through which the latter extend;

(c) means for mounting said sealing element in said recess **(35)** for sliding movement restricted to the alternate vertical movement of the slide members; and

(d) means operatively associated with said channel **(34)** for receiving excess lubricant removed from the slide members by said spaced walls and returning the same to the lubricating chamber.

4,284,020

THREAD MONITOR FOR TEXTILE MACHINES

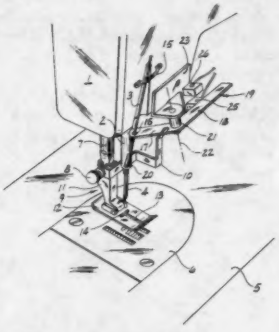
William R. Connor, Jr., Shelbyville, Tenn.; Heinz Hubele, Kaiserslautern, and Kurt Petry, Stelzenberg, both of Fed. Rep. of Germany, assignors to Stahl-Urban Company, Brookhaven, Miss.

Filed Jul. 6, 1979, Ser. No. 55,178

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830534

Int. Cl.³ D05B *69/36*

U.S. Cl. 112—273 **11 Claims**



1. A thread monitor for a sewing machine having a needle, said monitor comprising control means operable for stopping the operation of the machine, a thread feeler engageable with the thread supplied to the needle, and means mounting the feeler for movement between a retracted position with respect to the control means and an operative position for actuating the control means for stopping the operation of the machine, said mounting means comprising means for supporting the feeler on the sewing machine with the feeler in frictional engagement with said supporting means and movable thereon between its said positions, said feeler being biased toward its operative position and adapted to be held in its retracted position against the bias by the thread, the bias being greater than the frictional force present between the feeler and said supporting means as the machine vibrates during the operation thereof but less than the frictional force present between the feeler and said supporting means when the machine is not in operation, so that, upon thread breakage when the machine is in operation, the feeler will move to its operative position for stopping the operation of the machine and, when the machine is not in operation, the feeler remains in retracted position.

4,284,021

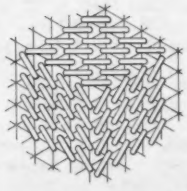
WOVEN GROUND FOR EMBROIDERY

Dianne Kaye, 22 Captain Brown's La., Acton, Mass.

Continuation-in-part of Ser. No. 888,377, Mar. 20, 1978, Pat. No. 4,191,219. This application Feb. 27, 1980, Ser. No. 125,222

Int. Cl.³ D05C *17/00*

U.S. Cl. 112—439 **4 Claims**



1. In combination, a triaxial fabric substrate and embroider-

ies stitched onto said triaxial substrate, said fabric substrate comprising first, second and third sets of yarn courses with the yarn courses within each set being woven at an acute angle to the courses of each other set and with the yarn courses of each set intersecting yarn courses of each other set at a plurality of spaced points,

said second set having yarn courses outermost of said first and third sets on one side of said fabric at selected points and said third set having yarn courses outermost of said first and second sets on the other side of the fabric at said selected points,

said yarn courses defining a pattern of equilaterally triangular pores having a cross dimension at least large enough to accommodate a needlepoint yarn course, wherein said embroideries comprise

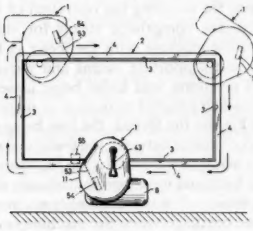
stitches embroidered on said substrate in at least one linear series, each stitch of said series encircling two parallel courses of the substrate and being disposed orthogonally thereto on one face of said canvas.

4,284,022

BENDING APPARATUS

Yukio Kanazawa, 880, Sekishi-cho, Hamamatsu-shi, Shizuoka-ken, Japan

Filed May 15, 1979, Ser. No. 39,160
Int. Cl.³ B21D *19/00*
U.S. Cl. 113—58 **15 Claims**



1. An apparatus for bending an end portion of a metal plate, said plate being reinforced with a guide member generally L-shaped in cross-section, said guide being secured to said plate adjacent said end portion comprising:

a frame member;

an engaging roller having a broad outer edge, said roller being rotatably mounted on said frame;

a pressing disc rotatably mounted on said frame, said disc having an outwardly facing surface positioned opposite said outer edge;

a plurality of rollers rotatably positioned on said outwardly facing surface of said disc;

means for adjusting the distance between said outer edge of said roller and said outwardly facing surface of said disc; and

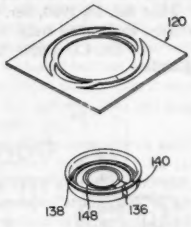
a drive motor mounted on said frame, said motor being connected to said engaging roller and said disc, and being capable of rotating said roller and disc, said roller and disc being arranged such that said end portion of said metal plate may be bent as said disc forceably presses said end portion against said L-shaped guide member, and said edge of said roller opposes said pressing force.

4,284,023

METHOD OF PRODUCING AN EASILY OPENABLE CONTAINER CLOSURE HAVING A SHELL AND A SEALING MEMBER

Kashiwa Murayama, Fujisawa, Japan, assignor to Japan Crown Cork Co., Ltd., Tokyo, Japan

Division of Ser. No. 16,606, Mar. 1, 1979, Pat No. 4,197,956.
This application Aug. 13, 1979, Ser. No. 66,465
Claims priority, application Japan, Mar. 3, 1978, 53-23544; Apr. 5, 1978, 53-39278; Aug. 11, 1978, 53-97286
Int. Cl.³ B21D *51/26*
U.S. Cl. 113—116 QA **5 Claims**



1. A method for producing a shell of a unitary structure comprising a top and a cylindrical skirt, said top having an annular top surface portion leading to the upper end of said skirt and a linking piece leading to a part of the inner peripheral edge of the annular top surface portion, a pull ring connected to said linking piece, said annular top surface portion and skirt having a pair of weakening lines extending from both side edges of said linking piece, which method comprises:

(a) forming at least one set of lance slits in a flat metal blank, said lance slits having at least two discontinuous portions spaced a predetermined distance from each other in the circumferential direction,

(b) forming a pair of weakening lines spaced from each other at a predetermined distance in the circumferential direction, said weakening lines extending over a predetermined distance from near the lance slits toward the center of a circular portion of the blank located inwardly of the lance slits,

(c) punching out an opening of a predetermined dimension in the circular portion at a position located inwardly of the lance slits,

(d) at least after the lance slit-forming step (a) and the weakening line-forming step (b), drawing the circular portion located inwardly of the lance slits to form a shell having a circular top with said opening therein and a substantially cylindrical skirt continuous therewith,

(e) at least after the drawing step (d), forming a slit in said circular top extending around said opening from near the inside end of one of said weakening lines to the vicinity of the inside end of the other weakening line, said slit being spaced a predetermined distance outwardly from said opening in the radial direction,

(f) after the punching step (c) and the slit-forming step (e), bending the portion between said opening of the circular top and the slit to form a pull ring, and

(g) after the bending step (f), separating the thus formed shell from the metal blank.

4,284,024

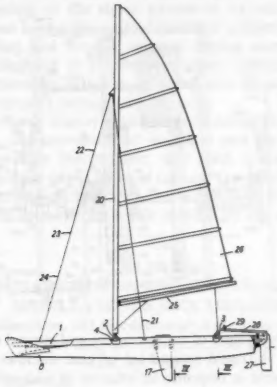
MULTI-HULL BOAT

Jon A. Montgomery, 84 Broom Park, Teddington, Middlesex, England

Filed Jun. 11, 1979, Ser. No. 47,069
Int. Cl.³ B63B *1/00*
U.S. Cl. 114—61 **11 Claims**

1. A boat comprising a pair of inflatable hulls, a pair of torsionally stiff longitudinal beams, one for each hull, securing

means attaching each said longitudinal beam to the top of the respective hull and extending substantially the whole length of the hull when the latter is inflated, a pair of cross beams interconnecting the longitudinal beams at spaced positions along the lengths of the longitudinal beams, means securing the cross beams to the longitudinal beams at said spaced positions against torques generated in the longitudinal beams, each hull being



substantially tubular and tapering down towards a tip at the bow end of the hull, said tip being spaced below the longitudinal beam, and a bow stem structure connected to each said tapered hull bow and holding the said hull bow spaced in a fixed position below said longitudinal beam, each said bow stem structure further defining a pair of bow wings diverging from a bow forming portion rearwardly along and above said tapered hull bow.

4,284,025

RUDDER ARRANGEMENT FOR SHIPS

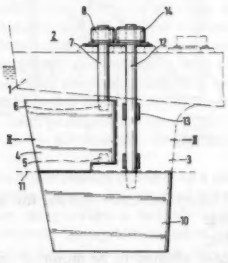
Klaus Eckhard, Eckernförde, Fed. Rep. of Germany, assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Kiel, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,488

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834015

Int. Cl.³ B63H *25/38*

U.S. Cl. 114—163 **5 Claims**



1. A ship comprising:

(a) a hull including a stationary rudder horn extending downwardly, said horn having a substantially horizontal bottom edge, a substantially vertical rear edge and a portion extending rearwardly adjacent said bottom edge of said horn;

(b) an upper rudder blade extending rearwardly from said rudder horn, the forward end thereof being positioned between said hull and said rearwardly extending portion;

(c) first means mounting said upper rudder blade for pivotal movement about an axis extending between said hull and said rearwardly extending portion;

(d) a lower rudder blade positioned below said rudder horn;

(e) second means mounting said lower rudder blade for pivotal movement about an axis passing through said horn;

(f) said axes being non-coincident; and

(g) first and second drive means for pivoting said upper and lower rudder blades respectively independently of each other;

(h) whereby the steering capability of said ship is maintained in the event one of said mounting means is inoperable.

4,284,026

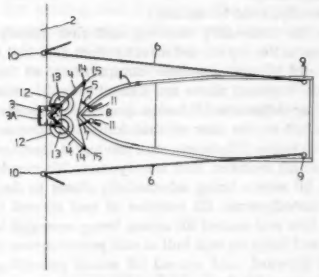
MOORING DEVICE

Charles M. Martinson, and David J. Martinson, both of Stanwood, Wash., assignors to Mar-Fam, Inc., Stanwood, Wash.

Filed Mar. 10, 1980, Ser. No. 128,721

Int. Cl.³ B63B *21/20*

U.S. Cl. 114—230 **11 Claims**



1. A vertically adjustable, variable buoyancy basic mooring device for boats which device secures the bow of the boat to a resilient stretch member allowing full articulation while at the same time preventing pivotal movement of the stern of the boat in response to wind and wave forces acting on the boat comprising:

a fixed or floating base landing structure including a base unit, said base unit being rigidly affixed to said fixed or floating base landing structure,

attached to the base unit is a vertically adjustable base which includes stationary landing arms which are rigidly affixed to said vertically adjustable base, and positioned at the end of said stationary landing arms are four rigidly affixed stationary landing arm uprights, between which is positioned a resilient stretch member.

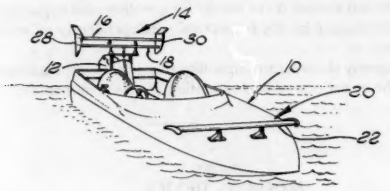
a flotation unit or units attached to the stationary landing arms which when positioned in the water as a result of adjusting the vertically adjustable base, offers buoyancy equal to or in excess of the weight of the total mooring device,

wherein the bow of the boat is positioned against the resilient stretch member causing deflection of said stretch member at which time lines from opposite sides of the stern of the boat are attached to two docks cleats which are mounted on the fixed or floating landing structure at such an angle as to severely restrict pivotal movement of the boat followed by tensioning of the bow lines which are attached at one end of the resilient stretch member and are thus attached at the other end to the bow of the boat.

4,284,027
BOAT WITH CANTED WING FINS

Delfino C. Montez, 24888 E. Rialto Ave., San Bernardino, Calif. 92408

Continuation-in-part of Ser. No. 890,746, Mar. 27, 1978, Pat. No. 4,237,811. This application Jan. 11, 1979, Ser. No. 2,482
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.[3] B63B *1/32*
U.S. Cl. 114—273 19 Claims



1. In a surface boat having a hull with an open passenger compartment between front and rear portions and power means having a water reactive means located aft of said passenger compartment for driving said boat forward, the improvement comprising:

first aerodynamic lift means;

means for removably securing said first aerodynamic lift means to the top of, and directly over, said hull at a region forward of said passenger compartment so that said lift means is spaced above and limited to said forward region;

second aerodynamic lift means spaced above and removably attached to the rear of said hull, said first and second aerodynamic lift means each having at least one aerodynamic lift member, said aerodynamic lift member of said first lift means being substantially closer to the hull than any aerodynamic lift member of said second lift means, said first and second lift means being arranged to exert an upward force on said hull as said power means drives said boat forward, said second lift means providing substantially more lift than said first lift means;

a substantial portion of said passenger compartment being clear of any aerodynamic lift means; said aerodynamic lift member of said second lift means comprising a first elongated wing; and

lateral stabilization means comprising at least one stabilization fin attached to said wing and vertically directed therefrom, said fin having a portion canted with respect to said vertical direction.

4,284,028
ENGLISH/METRIC CONVERSION MECHANISM FOR SPEEDOMETERS

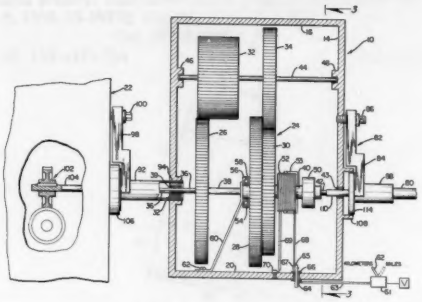
Mark G. Swanburg, 2595 S. Julian, Denver, Colo. 80219

Filed Feb. 14, 1979, Ser. No. 12,237
Int. Cl.[3] G01P *3/42;* H01F *7/06*
U.S. Cl. 116—62.2 14 Claims

1. A speed conversion apparatus adapted for attachment to a speed measuring device of a motor vehicle and the like wherein said speed measuring device has a rotatable drive member which is driven by a motive drive source and a speed indicator indexed in units of a first system of measurement to indicate the speed of said motor vehicle in response to the rate of rotation of said rotatable drive member, said speed conversion apparatus comprising:

a gear train interposed between said rotatable drive member and said speed indicator including a first set of gear members rotatable in response to rotation of said rotatable drive member to cause said speed indicator to indicate speed in units of the first system of measurement and a second set of gear members rotatable in response to rotation of said rotatable drive member to cause said speed indicator to indicate speed in a second system of measurement; and

shifting means operatively arranged on shaft means of said gear train and adjacent to said gear train including first means to selectively shift said first set of gear members into a position in which said first set of gear members is rotatable in response to rotation of said rotatable drive member to cause said speed indicator to indicate speed in

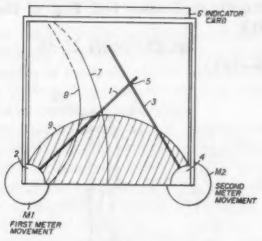


units of the first system of measurement and second means to selectively shift said second set of gear members to a position rotatable in response to rotation of said rotatable drive member to cause said speed indicator to indicate speed in units of the second system of measurement, and a shift activator operative to cause said shifting means to selectively shift one of said first and second sets of gear members into engagement with said rotatable drive member.

4,284,029
TAKE-OFF SAFETY INDICATOR FOR AIRCRAFT

Graham E. Roberts, 94 Park Ave. East, Ewell, Surrey, England

Continuation of Ser. No. 850,487, Nov. 10, 1977, abandoned.
This application Oct. 2, 1979, Ser. No. 81,258
Claims priority, application United Kingdom, Nov. 22, 1976, 48672/76
Int. Cl.[3] G01C *23/00;* G01D *7/04*
U.S. Cl. 116—300 5 Claims



2. A take-off safety indicator device for an aircraft, said device comprising:

a meter housing;

first signal means adapted to be mounted on an aircraft for generating a signal corresponding to the distance traveled by the aircraft during take-off;

first movement and display means connected to said meter housing and to said first signal means and movable in response to the signal generated by said first signal means for visually displaying the distance traveled by the aircraft during take-off, said first movement and display means including a first pointer movable corresponding to the signal generated by said first signal means;

second signal means adapted to be mounted on the aircraft for generating a signal corresponding to the air speed of the aircraft during take-off;

second movement and display means connected to said meter housing and to said second signal means and movable in response to the signal generated by said second signal means for visually displaying the air speed of the aircraft during take-off, said second movement and display means including a second pointer movable corresponding to the signal generated by said second signal means across the path of said first pointer;

said first and second pointers during movement thereof overlapping at a crossover point corresponding to the relationship between air speed and distance traveled by the aircraft during take-off; and

a removable display card inserted into said meter housing so that the movement of said first and second pointers is observable thereagainst, said card containing markings indicative of the locus of take-off correlations between air speed and distance traveled, as indicated by said crossover point, required for a safe take-off by the aircraft.

4,284,030

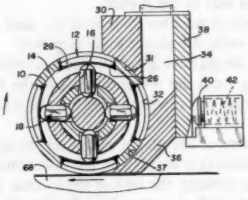
ROTARY DISPENSING CHAMBERS WITH SIMULTANEOUS SIZE ADJUSTMENT

Joel A. Hamilton, 101 Hardenburgh Ave., Demarest, N.J. 07627

Filed Jun. 10, 1980, Ser. No. 158,321

Int. Cl.[3] B05C *5/02*

U.S. Cl. 118—406 **16 Claims**



1. Apparatus for dispensing a measured amount of powder, granular and like material, said material delivered from a chute, this dispenser apparatus having a rotated, disk-like assembly that is revolved in a timed relationship to the advancement of a travelling web of packaging material, this dispenser including:

(a) an outer, disk-like member which has a tubular configuration and in which is formed a plurality of like-sized and shaped pockets having an established volume in each pocket, these pockets arranged in an equally spaced array with each pocket from filling to delivery and to a refill position maintaining said established volume;

(b) an inner tubular supporting member having means for engaging, positioning and retaining said outer disk-like member, said tubular supporting member having a plurality of radially disposed passageways formed therein and therethrough, each passageway corresponding to a pocket and disposed to be substantially at the midportion of a pocket;

(c) a bottom spring-like closure member of a generally sheet-like configuration, said member urged toward and to a shaped pocket to provide a bottom closure for said pocket, said bottom spring-like member in engagement with the undersurface of the outer disk-like member while providing a closure thereof;

(d) resilient side retaining portions formed on and affixed to each bottom spring-like closure member, said side retaining portion sized and adapted to engage the formed side walls of the shaped pocket to preserve the integrity of the pocket against any leakage of material being dispensed and fed from the chute;

(e) a tubular shaft carried within the inner tubular supporting member and at larger diameter portions adapted to support said inner tubular supporting member and the supported outer disk-like member, this tubular shaft also having radially disposed passageways sized and adapted to communicate with and extend the passageways formed in the inner tubular member;

(f) a spine shaft carried within the tubular shaft and movable therein, this spine shaft having conical cam portions provided thereon, each conical cam portion corresponding to a disk-like dispenser;

(g) a plurality of like sized pins, a pin being carried in each radially disposed passageway and each pin at its outer end adapted to engage the inner surface of the spring-like closure member to urge said member outwardly and at its inner end to engage said conical cam portion on the spine shaft;

(h) a chute disposed to deliver material to a rotary dispenser, each chute having an outlet adapted to feed dispensed material to a pocket when brought in way of said outlet;

(i) a shroud portion in association with said chute, said shroud disposed to close the filled pocket to further filling from said chute and during rotational advancement of the filled pocket to maintain the integrity of the material in this filled pocket;

(j) a travelling web of film adapted, at least in part, to retain the material being dispensed, and means to bring and support this web as it is brought in way of a position at the lowermost point of the rotating disk;

(k) means for rotating and supporting the tubular shaft so that the peripherial speed of the rotated dispenser is at the speed of advance of the travelling web of film, and

(l) means for moving the spine shaft and any and all conical cam portions thereon so as to move the pins carried in the radially disposed passageway in the inner tubular supporting member and associated therewith to simultaneously alter to a small extent the volume of each pocket.

4,284,031

MAGNETIC TRANSFER SURFACE FOR CONTROLLING TONER THICKNESS

James B. Thaxter, Townsend, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,215

Int. Cl.[3] G03G *15/09*

U.S. Cl. 118—657 **3 Claims**

1. An electrophoretic printer for printing an image upon a recipient sheet comprising:

a reservoir of magnetically susceptible toner;

magnetic brush means, having an outer surface and an inner surface of repetitive and equally spaced north and south magnetic poles, associated with said reservoir for attracting the magnetically susceptible toner;

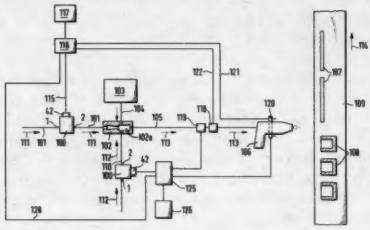
magnetic transport surface means having an aperiodic magnetic reversal pattern thereon, said magnetic reversal pattern having a pitch selected to provide a desired thickness of magnetically susceptible toner received by the magnetic surface transport means, aligned and cooperating with said magnetic brush means; and

a print head situated above said magnetic transport surface to receive simultaneously the recipient sheet and the layer of magnetically susceptible toner.

4,284,032
PNEUMATIC CONVEYOR OF ADJUSTABLE CONVEYANCE CAPACITY FOR POWDERED TO GRANULAR BULK MATERIAL

Kurt Moos, Wil, and Karl Buschor, St. Gall, both of Sweden, assignors to Gema AG, Switzerland

Filed Nov. 13, 1979, Ser. No. 93,637
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849295
Int. Cl.³ B65G *53/66*
U.S. Cl. 118—684 27 Claims



1. A pneumatic conveyor system with adjustable capacity for conveying a powdered to granular bulk material, comprising:

a pneumatic conveyor apparatus for drawing a powdered to granular bulk material from a source thereof and mixing it with a propellant gas;

propellant gas conduit means for feeding the propellant gas to said pneumatic conveyor apparatus;

second conduit means for delivering the mixture of the gas and the bulk material to a spray device for spray-coating an object;

a first pressure regulator cooperating pneumatically with said pneumatic conveyor apparatus to control the rate at which the mixture is delivered for spraying, by controlling the rate at which one of the components of the mixture is supplied to said pneumatic conveyor apparatus for mixing, wherein said first pressure regulator comprises:

an inlet for a propellant gas;

an outlet for the propellant gas;

a main valve for controlling the flow of the propellant gas from said inlet to said outlet; said main valve having a main valve body;

means defining a control pressure space for urging said main valve open by means of exerting pressure on said main valve body, said control pressure space communicating with said inlet via a pre-regulation conduit; said means defining said control pressure space including pressure comparison means having two opposite sides, one of said opposite sides being exposed to the pressure in said control pressure space and the other of said opposite sides being exposed to a second pressure for comparing the second pressure to the pressure in said control pressure space;

a control valve for controlling pressure in said control pressure space, said control pressure space communicating via said control valve with a first vent;

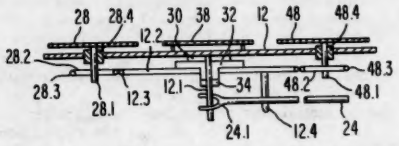
pressure control means including said first control means for urging said control valve closed, to control the pressure in said control pressure space;

means defining a feedback pressure space for urging said main valve closed by means of exerting a force on said other of said two opposite sides of said pressure comparison means, the pressure in said feedback pressure space being the second pressure exerted on said pressure comparison means; said feedback pressure space communicating with said outlet and with a second vent.

4,284,033
MEANS TO ORBIT AND ROTATE TARGET WAFERS SUPPORTED ON PLANET MEMBER

Eddy H. del Rio, Jupiter, Fla., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,858
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—730 4 Claims



1. In a vacuum deposition system including a source of material positioned on the axis of the system, a plurality of circular planet members mounted for orbital movement about the system axis and for rotational movement about its own axis, a plurality of wafer targets for supporting an equal plurality of substrates on which the source material is to be deposited, a plurality of the wafer targets mounted on each of the planet members within the perimeter thereof, the improvement comprising for each planet and its associated wafer targets:

a planet shaft member one end of which is mounted on the rotational axis of the planet;

a planet wheel member mounted on, and having limited rotation with, the planet shaft member;

each wafer target having a shaft member with an end thereof extending from the rotational axis of the target;

a wafer target drive wheel fixed on the wafer target shaft member;

the perimeters of the planet and wafer target drive wheels being operatively associated with one another;

a drive arm orbiting the axis of the system and operatively associated with the planet shaft whereby to carry said planet through said orbital and rotational movement; and

a stop element extending generally parallel to the planet shaft member and outwardly from the planet drive member;

said stop element being operatively associated with the drive arm whereby during said rotational movement of the planet, the stop element contacts the orbiting drive arm to thereby stop further rotational movement of the planet wheel to thereby initiate rotational movement of the orbiting wafer target drive wheel due to said operative association of the perimeters.

4,284,034
BIOCENTRIFUGE SYSTEM CAPABLE OF EXCHANGING SPECIMEN CAGES WHILE IN OPERATIONAL MODE

Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

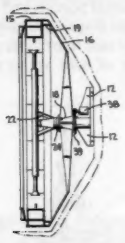
Filed Apr. 30, 1980, Ser. No. 145,273
Int. Cl.³ A01K *1/00*
U.S. Cl. 119—17 26 Claims

1. A centrifuge system comprising:

(a) a frame having a plurality of containers removably and replaceably mounted about its periphery, said frame having a stationary inoperative mode and a rotating operational mode;

(b) a rotatable device positioned adjacent to said frame;

(c) means for rotating said frame and means for rotating said device;



(d) said device including means for removing and replacing at least one of said containers from said frame while said frame is rotating in its operational mode; and

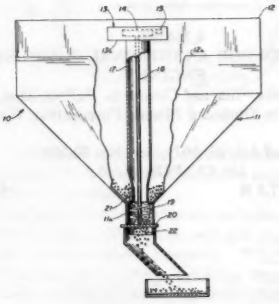
(e) means for supporting said frame and said device.

4,284,035

AUTOMATIC LIVESTOCK FEEDER

Wallace E. White, Rte. 2, Box 2414, Splendora, Tex. 77372

Filed Jan. 21, 1980, Ser. No. 113,818
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51.11 **1 Claim**



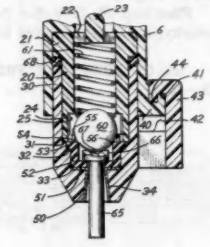
1. An automatic livestock feeder, comprising in combination, a downwardly converging feed-receiving bin, an upwardly extending back plate fixedly secured to a rear side of said feed-receiving bin, an electric motor and a timer secured inside a housing mounted to a front side of said back plate at an elevation higher than an upper edge of said bin, and a downwardly extending worm shaft secured at its upper end to said motor, and a lower end thereof extending into a tubular neck formed below a lower converging end of said bin, and an interior of said neck communicating with an interior of said bin, a worm formed on a lower portion of said shaft that extends below said bin converging end; said worm accordingly being inside said tubular neck, an axially extending, tapered screw extending downwardly from a terminal lower end of said shaft, a transversely extending, narrow bar through a longitudinally intermediate portion of said tubular neck, a bearing opening through said bar receiving a shank of said screw for rotation therein, and a sleeve fixedly secured to a bottom of said housing, extending downwardly to said converging end of said bin, said sleeve having a central opening, said sleeve being concentrically positioned around said shaft, and spaced therefrom by an interior opening of said sleeve being larger than a diameter of said shaft, said sleeve forming a shield preventing feed placed in said bin from contacting said shaft, and a circular discharge opening for said feed being formed between an outer side of said lower end of said sleeve and a wall of said bin around said converging end thereof, said feed discharged from said opening into said tubular neck where a diameter of said worm fits said neck opening and rotation of said worm moves said feed downwardly through said tubular neck around opposite side edges of said narrow bar extending transversely through said neck.

4,284,036

WATERING SYSTEM FOR FOWL AND SMALL ANIMALS

Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.

Filed Jan. 21, 1980, Ser. No. 113,607
Int. Cl.³ A01K *7/00*
U.S. Cl. 119—72.5 **9 Claims**



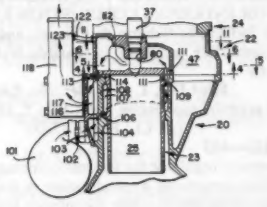
1. In a watering system for fowl and small animals including a water supply conduit having a downwardly extending tubular discharge outlet, comprising a tubular body having a sealed connection with said discharge outlet and defining a chamber having a restricted bottom outlet, resilient means in said chamber defining a pair of spaced concentric valve seats including an upper thin resilient circular sleeve, a valve member in said chamber normally seating on both valve seats, and a pin extending through said restricted bottom outlet with clearance and having a head within said chamber adjacent said valve member, said pin projecting below said body and shiftable vertically or laterally to unseat said valve member from said valve seats.

4,284,037

INTERNAL COMBUSTION ENGINE COOLANT SYSTEM

Edward W. Kasting, Seymour, and Richard E. Glasson, Columbus, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 18, 1978, Ser. No. 970,257
Int. Cl.³ F01P *3/02, 3/16*
U.S. Cl. 123—41.72 **12 Claims**



1. A head for a multiple cylinder internal combustion engine having a block and a coolant system, said block having a plurality of coolant flow passages therein, said head having one surface adapted to be attached to the upper side of said block and having coolant inlet and coolant outlet openings formed in said one surface, said inlet openings being at one side of said

head and said outlet openings being at the other side of said head, separated upper and lower coolant flow passages in said head and extending across said head between said inlet and outlet openings, and said inlet and outlet openings being adapted to communicate with said flow passages of said block and to conduct coolant to said flow passages of said head, both said upper and lower passages directly communicating with said outlet openings and coolant flowing to said outlet openings from said upper and lower passages.

4,284,038

RECIPROCATING DRIVE MEANS

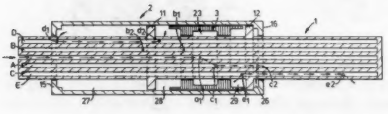
Frank E. West, 12 Newbury Dr., Bournemouth, Dorset, England, assignor to Baron Hire Limited and Frank Edward West, both of, England

Filed Sep. 25, 1979, Ser. No. 78,844

Claims priority, application United Kingdom, Sep. 29, 1978, 38712/78

Int. Cl.³ F01B *15/06*; F02B *71/00*

U.S. Cl. 123—46 A **8 Claims**



1. Reciprocating drive means comprising an elongate inner member with a plurality of passageways therein, two fixed plates on said inner member, an outer member slidable on said inner member, a seal at the peripheral surfaces of each of said fixed plates to seal against the inner face of the wall of said outer member, an end wall on said outer member with a seal at said end wall slidable on said inner member, a shuttle member slidable with respect to said inner member between said two fixed plates and within said outer member, a seal at the outer peripheral surface of said shuttle member to seal against said inner face of the wall of said outer member and axially spaced seals at the inner peripheral surface of said shuttle member to seal against said inner member, a first compartment formed between said axially spaced seals, and ports in said inner member communicating respective ones of said passageways in said inner member with the surface thereof, said ports co-operating in use with the relatively moving said outer member and said shuttle member to effect valving operations to interconnect said passageways with one another and with compartments formed between said inner member and said outer member and separated from one another by said fixed plates and said shuttle member.

4,284,039

PRESSURE REGULATOR FOR INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Francesco Bellicardi; Roberto de Concini, and Rino Bolelli, all of Bologna, Italy, assignors to Edoardo Weber S.p.A., Bologna, Italy

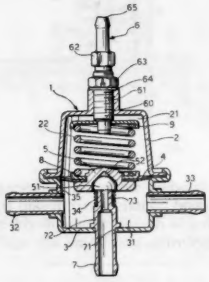
Filed Feb. 1, 1979, Ser. No. 8,465

Claims priority, application Italy, Feb. 7, 1978, 3325 A/78

Int. Cl.³ F02M *17/00*

U.S. Cl. 123—463 **2 Claims**

1. A pressure regulator for internal combustion engine injection systems comprising a metal casing, a diaphragm secured within said casing and dividing the interior into a first chamber and a second chamber, a first duct in said casing adapted to communicate said first chamber with an intake manifold, a second duct in said casing adapted to communicate said second chamber with a pump, a third duct in said casing adapted to communicate said second chamber with fuel injectors, and a fourth duct in said casing having an inlet extending into said second chamber adapted to communicate said second chamber with a fuel tank, closure means operatively associated with said diaphragm for opening and closing said inlet of said fourth duct, said closure means comprising a hemispherical valve member having a spherical portion and a flat surface, a support means connected to said diaphragm and having a recess therein opposed to said inlet of said fourth duct for rotatably receiving said spherical portion of said valve member with said flat



surface facing said inlet and means for biasing said spherical portion of said valve member into contact with said recess, said spherical portion having the center thereof lying in the plane of said flat surface, said means for biasing said spherical portion into contact with said recess is comprised of a coil spring surrounding said fourth duct and engaging said flat surface.

4,284,040

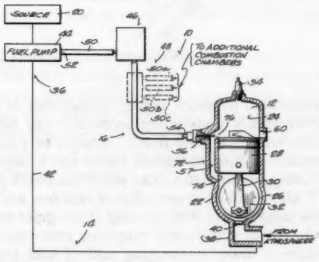
FUEL PRIMER FOR AN INTERNAL COMBUSTION ENGINE

Gene F. Baltz, Lake Villa, and Chester G. DuBois, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 25, 1979, Ser. No. 60,288

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—187.5 R **6 Claims**



1. An engine comprising a combustion chamber, wall means for defining a fuel induction passage having a fuel outlet port communicating with said combustion chamber, fuel pumping means adapted for connection to a fuel source, first fuel delivery means communicating with said fuel pumping means for delivery of fuel thereto and with said fuel induction passage for introducing fuel therefrom into said combustion chamber, second fuel delivery means communicating with said fuel pumping means for delivery of fuel thereinto independently of said first fuel delivery means and including nozzle means extending into said fuel induction passage adjacent to said fuel outlet port for emitting fuel directly into said combustion chamber through said fuel outlet port, said second fuel delivery means being operative for introducing fuel directly into said combustion chamber through said nozzle means in addition to the fuel introduced by said first fuel delivery means, and control means connected to said second fuel delivery means

for selectively operating said second fuel delivery means to introduce fuel into said combustion chamber through said nozzle.

4,284,041

METHOD OF PRODUCING CYLINDER HEADS, AND CYLINDER HEAD PRODUCED THEREBY

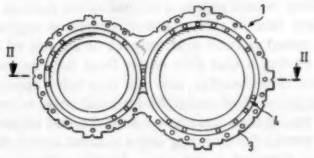
Walter Rasch; Karl-Heinz Caspers; Klaus Wiebecke, all of Nuremberg, and Max Albert, Nürnberg-Kornburg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,898

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2816989

Int. Cl.[3] F02F *1/24;* B22D *19/02;* F02B *77/02*

U.S. Cl. 123—193 H 2 Claims



1. A method of producing partially reinforced cylinder heads, particularly of internal combustion engines, comprising in combination the steps of:

providing a pre-formed workpiece including a valve bridge, valve seat, valve fillet, valve web and made of a predetermined material composition; and

casting on said workpiece a high-alloy fatigue-resistant material for high heat stability capable of producing a bond with said predetermined material composition in areas of maximum thermal and mechanical stresses for forming a positive connection between said workpiece and said casting of high-alloy fatigue-resistant material to reduce possibility of valve bridge cracks by increasing creep strength, said pre-formed workpiece including at least one fusible portion, said method further including the steps of:

alloying said predetermined material composition of said preformed workpiece in a composition including by weight percent,

C	3.0	maximum
Si	1.7–2.2	
Mn	1.0–1.5	
Ni	18–22	
Cr	1.8–2.4	
Nb	0.1	
Mg	0.05	
Fe	Balance	

and wherein said casting material includes a cast iron composition for cylinder heads of internal combustion engines,

supporting said pre-formed workpiece in a predetermined position, whereby said at least one fusible portion faces downwardly; and

casting said material in such a way that said casting material rises at said at least one fusible portion.

4,284,042

MULTICYLINDER INTERNAL COMBUSTION ENGINE WITH VALVE DISCONNECTION

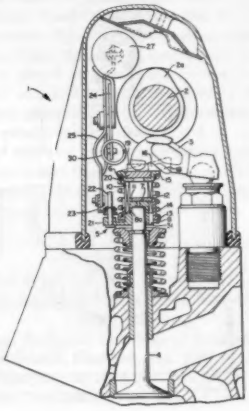
Willi Springer, Göppingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,190

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814087; Apr. 3, 1978, 2814307

Int. Cl.[3] F02D *13/06*

U.S. Cl. 123—198 F 16 Claims



1. A multicylinder internal combustion engine which includes a valve means for the respective cylinders of the engine and means for selectively shutting off a valve means of at least one of the cylinders, the valve means including a valve stem and a valve actuating means, characterized in that an intermediate mechanical device is interposed between an end of the valve stem and the valve actuating means for selectively forming a rigid interconnection between the valve stem and valve actuating means and, in a closed setting of the valve means, for eliminating the interconnection between the end of the valve stem and the valve actuating means, a pressure member is arranged between the intermediate mechanical device and the valve actuating means, and in that a spring means is disposed below the pressure member for constantly urging the intermediate mechanical device into abutment with the end of the valve stem.

4,284,043

METHOD FOR OPERATING AN AIR-COMPRESSING AUTO-IGNITING INTERNAL COMBUSTION ENGINE AND INJECTION VALVE SUITABLE THEREFOR

Robert Happel, Waiblingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,172

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753953

Int. Cl.[3] F02M *45/08*

U.S. Cl. 123—299 21 Claims

1. An injection valve for high pressure injection of a liquid fuel having a flow direction into a working space of an internal combustion engine comprising:

at least two valve needle means concentrically nested within one another;

at least two spring means each adapted to press said valve needle means adjacent an associated valve seat means;

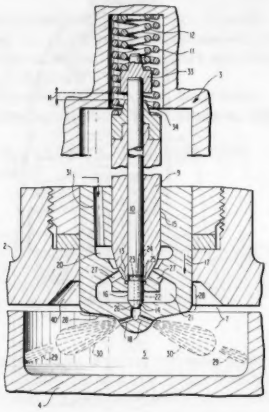
at least two valve seat means each associated with a respective valve needle means;

at least two hydraulically, in-series connected pressure space

means, each of said pressure space means being located upstream of an associated valve seat means;

wherein each of said valve needle means further comprises:

a valve needle piston means constructed larger in diameter than an associated valve seat means and a pressure space means in operative connection with an effective side of said valve needle piston means, with said valve needle means being pressed against an associated valve seat means by the force of an associated spring means in a



closing direction and being operable to be lifted off from said associated valve seat means;

whereby a downstream pressure space means, dimensioned approximately the same size as the largest fuel quantity to be injected by said injection valve per working cycle, is operable to be closed off hydraulically by the valve needle means and is arranged exposed in heat-absorbing relationship to the working space of the internal combustion engine.

4,284,044

COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

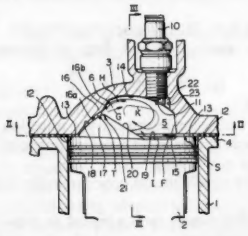
Kiyoshi Nakanishi, Susono; Kazuhiko Ito, Toyota; Takeshi Okumura, Susono; Isamu Iezuka, Toyota, and Masao Yasukawa, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 3, 1979, Ser. No. 35,617

Claims priority, application Japan, Jul. 20, 1978, 53-87667

Int. Cl.³ F02B *23/08*

U.S. Cl. 123—307 **9 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a cylinder head mounted on said cylinder block and having an inner wall;

a first raised portion having on its lower end a flat bottom face and being formed on the periphery of the inner wall of said cylinder head so as to project downwards;

a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face, the inner wall of said cylinder head and the top face of said piston defining a combustion chamber therebetween;

an intake valve movably mounted on said cylinder head for leading a combustible mixture into said combustion chamber;

an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;

a spark plug having a spark plug recess located in said combustion chamber on the inner wall of said cylinder head, said recess extending outwardly beyond a straight line extending between the peripheries of the intake and exhaust valves;

a first squish area spouting out a first squish flow as said piston reaches the end of its compression stroke, said first squish area comprising an annular area between said flat peripheral portion of the top face of said piston and the flat bottom face of said cylinder head, said first squish area extending substantially along the entire periphery of said top face of said piston; a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said combustion chamber, said rear face being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said combustion chamber in the direction opposite to the spouting direction of said first squish flow;

said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said combustion chamber, said first squish area extending inward from the periphery of said top face of said piston to a continuous sinuous periphery which extends around and is almost vertically under said intake valve, said exhaust valve, and said spark plug recess and adjacent to said second raised portion; and

a third raised portion formed on the inner wall of said cylinder head above said second raised portion and having a bottom wall which cooperates with said rear face of said second raised portion for creating said second squish area therebetween.

4,284,045

SIMPLIFIED ELECTRONIC IGNITION TIMING AND A/D CONVERSION

Thomas A. Maier, Apollo, Pa., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Sep. 12, 1979, Ser. No. 74,615

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—416 **3 Claims**

1. Electronic spark timing angle apparatus for a spark ignition, internal combustion engine, comprising:

means for providing cylinder signals indicative of the occurrence of each cylinder-related sub-cycle of the engine;

means for providing engine angle signals delineating angular rotation of the engine within each cylinder-related subcycle of engine rotation, said engine angle signals indicating angles of rotation which are much smaller than the angles of rotation related to each cylinder-related subcycle of the engine;

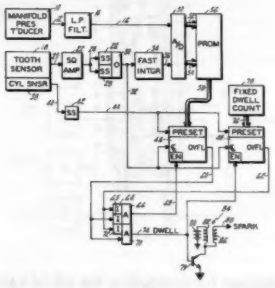
means operative in response to inlet manifold pressure of the engine for providing pressure signals indicative of engine loading;

means for providing firing angle signals indicative of the

desired spark firing angle as a function of engine speed and load in response to said pressure signals and a time function of said engine angle signals indicative of rotary speed of the engine; and

counting means responsive to said firing angle signals, said cylinder signals, and said engine angle signals for counting a particular number of said engine angle signals which occur subsequent to each of said cylinder signals, said particular number in each case being determined by said firing angle signals, and for providing an end of dwell signal indicating the time of occurrence of the desired firing angle in response to completion of counting of said particular number of angle signals;

characterized by said counting means including a pair of



presettable counters, each having preset inputs, a preset enable input connected to said cylinder signals, a clock input connected to said angle signals, a clock enable input and an overflow output; and

logic means responsive to both of said overflow outputs and connected to both of said clock enable inputs to enable a first one of said counters to be clocked by said angle signals only between presetting of both of said counters and the completion of counting in said first counter as indicated by a signal at the overflow output of said first counter, and to enable said second counter go be clocked by said angle signals only between completion of count of said first counter and completion of count of said second counter as indicated by signals at both said overflow outputs.

4,284,046

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

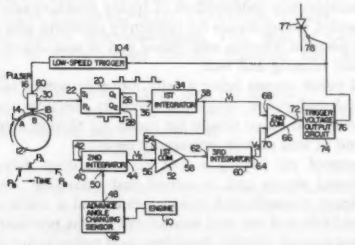
Hideyuki Hashimoto, Katsuta; Yoshito Kyogoku, Mito, and Hiroshi Katada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 112,746

Claims priority, application Japan, Jan. 19, 1979, 54/3851

Int. Cl.³ F02P *5/08*

U.S. Cl. 123—418 **4 Claims**



1. A contactless ignition system for an internal combustion engine, comprising: position detector means for detecting the minimum advance angle position and the maximum advance angle position where a first advance angle position signal and a second advance angle position signal are generated respectively; first signal generator means for generating a first signal changing at a predetermined change rate in response to the first advance angle position signal of said position detector means, said first signal generator means holding said first signal at a predetermined level in response to the second advance angle position signal of said position detector means; second signal generator means for generating a second signal changing at a predetermined change rate in response to the second advance angle position signal of said position detector means; means for controlling the change rate of said second signal; first comparator means for generating an output signal when said first signal and said second signal coincide with each other; third signal generator means for generating a third signal changing at a predetermined change rate in response to an output signal of said first comparator means, said third signal having a predetermined initial value; and second comparator means for generating an ignition signal when said first signal and said third signal coincide with each other.

4,284,047

APPARATUS FOR CONTROLLING THE AIR-FUEL QUANTITY RATIO IN INTERNAL COMBUSTION ENGINES

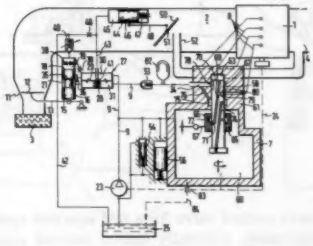
Gerhard Stumpp, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,237

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841807

Int. Cl.³ F02M *41/00*

U.S. Cl. 123—449 **10 Claims**



1. An apparatus for controlling the fuel-air quantity ratio of the operational mixture to be introduced into the combustion chambers of an internal combustion engine including an air flow rate meter disposed in the intake manifold of the engine, a servo device having a working chamber, said air flow rate meter being movable under differential pressure against a substantially constant hydraulic restoring force generated in said servo device working chamber, a fuel supply line, a fuel metering throttle device in said fuel supply line having a metering cross section, and a working chamber, a fuel supply pump for supplying fuel to said fuel supply line, the displacement of said air flow rate meter being arranged to actuate said fuel metering throttle device, a fuel injection pump having at least one pump piston and one pump working chamber connected to said fuel supply line, said fuel injection pump being provided with fuel feed channels leading to injection points in said engine, and including a differential pressure valve whose pressure chambers are subjected to the pressures present at said metering cross section of said fuel metering throttle device, the differential pressure valve maintaining a constant pressure drop at the metering cross section and wherein said working chamber in said fuel metering throttle device upstream of said metering cross section communicates with the fuel supply line,

wherein said fuel supply pump is associated with said fuel injection pump, said fuel injection pump having a working chamber and a fuel-filled chamber including the drive means for the pump piston, a pressure control valve, means for communicating the supply side of said fuel supply pump with said pressure control valve for setting a variable supply pressure and with said fuel-filled chamber, means including a flushing throttle for conducting fuel out of said fuel-filled chamber in a pressure-relieved manner via said flushing throttle, a throttle for uncoupling the variable supply pressure of said fuel supply pump, a pressure maintenance valve for setting the pressure becoming effective at least in the working chamber of said fuel metering throttle device downstream of said throttle to a constant value, and means for communicating said injection pump working chamber with said fuel supply line excluding said feed channels.

4,284,048

PRESSURE CONTROL VALVE FOR A FUEL INJECTION SYSTEM

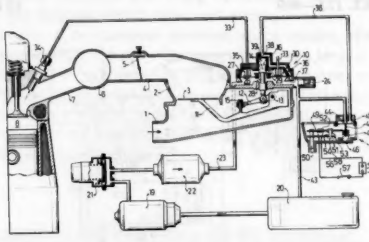
Peter Schelhas, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 55,125

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835782

Int. Cl.³ F02M *39/00, 1/02*

U.S. Cl. 123—453 **3 Claims**



1. A pressure control valve for a fuel injection system of a mixture-compressing, externally ignited internal combustion engine having an intake manifold provided with an air flow rate member which is moved in accordance with the quantity of air flowing therethrough against a restoring force generated by a constant pressure fluid which is arbitrarily variable by means of said pressure control valve having a movable element, said pressure being supplied into a control pressure line against a face of said movable element, said movable element having another face acted upon by action of a compression spring, the force of said compression spring being arranged to be reduced by at least a first temperature-dependent element, said pressure control valve further including a second temperature-dependent element which may influence the force of the first temperature-dependent element on the compression spring, further wherein a rigid connecting element is disposed between said first and second temperature-dependent elements, said rigid connecting element being affixed at one end to at least one of said temperature-dependent elements, whereby said rigid connecting element provided between said first and second temperature-dependent elements engages said first temperature-dependent element and urges said first temperature-dependent element in the direction of an increase in the force of said first temperature-dependent element on said compression spring only below a predetermined temperature.

4,284,049

FUEL INJECTOR VALVE NEEDLE LIFT CONTROL ARRANGEMENT

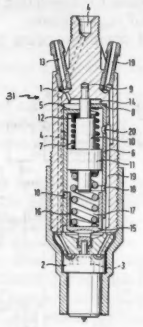
Franz Chmela, Nuremberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Mar. 21, 1979, Ser. No. 22,485

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812519

Int. Cl.³ F02M *47/00, 61/10*

U.S. Cl. 123—467 **10 Claims**



1. An arrangement for controlling the lift of a valve needle in fuel injectors of direct injection internal combustion engines, said arrangement comprising:

a hollow housing having a discharge end and an end face remote from said discharge end, said valve needle being axially displaceably supported in the discharge end of said housing for movement between a first seated position and a second unseated position, said housing having fuel inlet means operatively connected to said valve needle for supply fuel thereto, control medium inlet means for supplying control medium to said end face, and outlet means for communicating the hollow interior of said housing with the outside;

a sleeve axially displaceably arranged within the hollow interior of said housing, said sleeve being open towards said discharge end and closed at said end remote from said discharge end for receiving control medium between said closed end of said sleeve and said end face of said housing, said sleeve having at least one opening for communicating the interior of said sleeve with said outlet means;

piston means axially displaceably arranged within the hollow interior of said housing at the open end portion of said sleeve for closing said at least one opening, said piston means being operatively connected with said valve needle;

at least one spring means operatively arranged between said sleeve and said piston for resiliently acting upon said valve needle, the control of the lift of said valve needle being substantially independent of spring characteristic;

a further spring means for resiliently retaining said sleeve in a position wherein said closed end of said sleeve contacts said housing end face;

said piston means being axially movable within said sleeve and said piston means including an aperture open away from said valve needle for receiving therein a pertaining end of said at least one spring means;

a control pin having a first end extending through said closed sleeve end, a second end extending within said sleeve towards said piston means, and a collar between said first end and said second end for the provision of first and second annular shoulders, said collar being in sealing contact within said control sleeve, said further spring means being in contact with said first annular shoulder,

and said at least one spring means being in contact with said second annular shoulder.

4,284,050

APPARATUS FOR CONTROLLING THE MIXTURE COMPOSITION IN AN INTERNAL COMBUSTION ENGINE

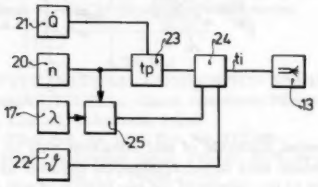
Wadym Suchowerskyj, Schwieberdingen; Peter Werner, Wiernsheim; Hans Schnürle, Waldheim; Werner Möhrle, Stuttgart, and Urlich Drews, Vaihingen-Pulverdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,899

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846386

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—483 **27 Claims**



1. In an apparatus for controlling the composition of a mixture delivered to a combustion chamber of an internal combustion engine which includes a plurality of operational parameter sensing means for controlling the quantity of fuel supplied to the engine as a function of said parameters, wherein said plurality of parameter sensing means includes an exhaust sensor, the improvement which comprises:

an electrically charged storage means for storing an electrical quantity;

charging source means, associated with said storage means and said plurality of operational parameter sensing means, for providing a charging current to charge said storage means, the initiation and duration of said charging current being controlled by said exhaust sensor, and the magnitude of said charging current being controlled by at least one of said operational parameter sensing means other than said exhaust sensor; and

discharging source means, associated with said storage means and said plurality of operational parameter sensing means, for controlling a discharge current from said storage means to discharge said storage means, the initiation and duration of said discharge current being controlled by said exhaust sensor, and the magnitude of said discharge current being controlled by at least one of said operational parameter sensing means other than said exhaust sensing means.

4,284,051

SWITCHING CONTROL APPARATUS FOR ELECTROMAGNETIC CONTROL UNITS

Wolfgang Maisch, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 67,067

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840192; Feb. 22, 1979, 2906835

Int. Cl.³ F02B *3/00*

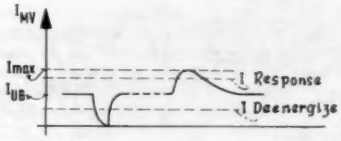
U.S. Cl. 123—490 **26 Claims**

1. In a system employing an electromagnetic control unit, the control unit having an excitation winding, an apparatus for reliably switching the control unit between an open and closed condition, the improvement in the apparatus comprising:

(a) an electrical switch connected in series with the excitation winding, said electrical switch having an actuating signal applied thereto;

(b) timing means connected to the electrical switch and responsive to operating parameters of the system for controlling the actuating signal applied to the electrical switch; and

(c) energy storing means for supplying, at a predetermined instant, an auxiliary signal directly to the excitation winding for switching the control unit to its open condition,



said energy storing means comprising a series circuit connected in parallel with the excitation winding, said series circuit including a capacitor and a resistor connected in series with the capacitor, and wherein a positive voltage is maintained at the junction between the capacitor and the resistor of the series circuit when the auxiliary signal is applied to the excitation winding.

4,284,052

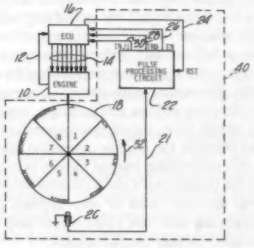
SEQUENTIAL INJECTOR TIMING APPARATUS

John C. P. Hanisko, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 23, 1979, Ser. No. 69,000

Int. Cl.³ F02D *5/02*

U.S. Cl. 123—490 **17 Claims**



1. An apparatus for providing control signals containing timing and steering information to an electronic control unit which actuates a plurality of sequentially operated fuel injectors of an internal combustion engine, said apparatus comprising:

means for generating groups of pulses in a sequential order synchronously with the revolution of the engine, said means includes a rotatable element divided into segments where each segment is associated with an individual injector and contains a group of sensible elements having a number of counting elements identifying the segment by their number and geometry and indicating the timing of actuation of such injector, and sensing means responsive to said elements for generating said groups of pulses; and

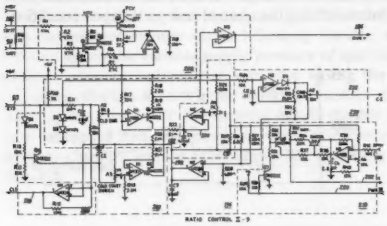
means for generating said control signals to the electronic control unit in response to said pulse groups, said control signal generating means generating an identification signal steering the next electronic control unit actuation to the identified injector and generating a trigger signal for timing the actuation of the identified injector.

4,284,053

ELECTRONIC ENGINE CONTROL

James W. Merrick, El Paso, Tex., assignor to Autotronic Controls Corp., El Paso, Tex.

Filed Apr. 24, 1978, Ser. No. 899,355
Int. Cl.³ F02B *3/00*; F02M *39/00*
U.S. Cl. 123—497 **55 Claims**



1. In an electronic controller for an internal combustion engine having a throttle for controlling the flow of air into an intake manifold wherein rate of air flow into the engine is measured by producing an air flow signal systematically related to the rate of air flow, and rate of fuel flow into the engine is measured by producing a fuel flow signal systematically related to the rate of fuel flow, said electronic controller including means for producing a ratio control signal corresponding to a respective air/fuel ratio, and means responsive to said air flow signal, said fuel flow signal and said ratio control signal for controlling fuel flow as to make the ratio of air flow to fuel flow substantially equal to said respective air/fuel ratio, the improvement wherein said means for producing said ratio control signal comprises means for providing a base run ratio signal corresponding to a respective run air/fuel ratio suitable for steady state engine operation, means for providing a temperature reference signal corresponding to a reference engine temperature, means responsive to engine temperature and said temperature reference signal for modifying said run ratio signal in systematic relation to engine temperature when said engine temperature is below said reference engine temperature to produce a run ratio signal corresponding to an air/fuel ratio systematically decreasing with decrease in engine temperature below said reference engine temperature, means for providing at least one other ratio signal corresponding to a respective air/fuel ratio suitable for engine operation under certain other conditions, discriminating output means responsive to applied ratio signals for producing a ratio control signal corresponding to the lowest air/fuel ratio of any applied ratio signal, and means for applying said run ratio signal and said at least one other ratio signal to said output means.

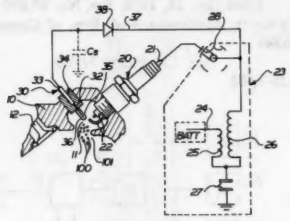
4,284,054

LEAN AIR-FUEL MIXTURE ATTRACTION METHOD AND ATTRACTION ELECTRODE PLUG IN ENGINE

Seiichiro Kumagai, Koishikawa; Michio Abe, Kasugai Aichi, and Naoyuki Maeda, Inuyama, all of Japan, assignors to Tokai TRW & Co. Ltd., Aichi, Japan

Filed Jul. 23, 1979, Ser. No. 57,384
Int. Cl.³ F02B *33/00*
U.S. Cl. 123—536 **1 Claim**

1. An apparatus for igniting a lean air-fuel mixture, said apparatus comprising means for defining a combustion chamber, said means for defining a combustion chamber including a cylinder head, a spark plug mounted in said cylinder head, said spark plug including a straight longitudinally extending main electrode extending into the combustion chamber and exposed to the atmosphere in the combustion chamber and a side electrode disposed adjacent to said main electrode and electrically, insulated from said main electrode, an attraction plug mounted in said cylinder head at a location offset to one side of and adjacent to said spark plug, said attraction plug including a straight longitudinally extending central electrode, a metal body connected with said cylinder head, and insulator means at least partially encasing said central electrode for electrically insulating said central electrode from said metal body and said cylinder head and for isolating the portion of said central electrode disposed in the combustion chamber from the atomsphere in the combustion chamber, said central electrode of said attraction plug having a longitudinal central axis extending transversely to the longitudinal central axis of said main electrode of said spark plug and an end portion which is disposed adjacent to said main electrode and is encased by said insulator means, means for applying an electrical potential to



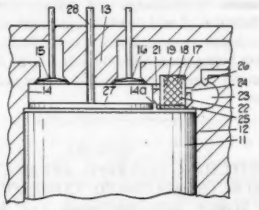
said central electrode of said attraction plug to establish an electrostatic field in the combustion chamber to attract fuel particles to the vicinity of the end portion of said central electrode of said attraction plug and to a gap between said main and side electrodes of said spark plug without establishing a corona discharge in the combustion chamber, and means for applying an electrical potential to said main electrode of said spark plug to establish a spark between said main and side electrodes to ignite fuel particles attracted to the vicinity of said spark plug by the electrostatic field from said attraction plug.

4,284,055

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

Anthony C. Wakeman, Birmingham, England, assignor to Lucas Industries, Limited, Birmingham, Great Britain

Filed Oct. 9, 1979, Ser. No. 82,545
Claims priority, application United Kingdom, Oct. 14, 1978, 40591/78
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—556 **14 Claims**



1. A low compression ratio reciprocating piston internal combustion engine comprises at least one piston and cylinder arrangement including a working volume in which the compression and power stages of the engine operating cycle occer, the working volume being bounded in part by the piston crown and the cylinder head and in part by inlet valve means and exhaust valve means, said inlet valve means comprising means for permitting an inlet charge to enter the working volume, said exhaust valve means comprising means for permitting products of combustion occurring within the working

volume to leave the working volume, said engine further comprising:

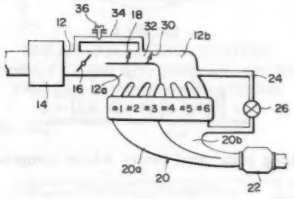
a regenerative heat exchanger located within said working volume, said heat exchanger having a hot face and a cold face between which gases are caused to flow, and, means for causing the charge to flow through the heat exchanger from the cold face to the hot face so as to be heated thereby immediately prior to the combustion stage of the engine operating cycle, wherein said means for causing comprises a single valve means for preventing substantial flow through said heat exchanger prior to completion of the compression stage of the engine operating cycle, the burning and expanding fuel/air mixture is caused to act directly on the piston of the piston and cylinder arrangement without passing through the heat exchanger, and the products of combustion are subsequently caused to flow through the heat exchanger from the hot face to the cold face to heat the heat exchanger before leaving the working volume by way of the exhaust valve means.

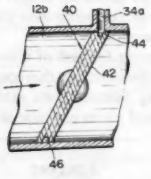
4,284,056

SPLIT-TYPE INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 20, 1980, Ser. No. 122,989
Claims priority, application Japan, Feb. 28, 1979, 54-22962
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **5 Claims**





1. An internal combustion engine comprising:

(a) an air intake passage provided therein with an air metering throttle valve and divided downstream of said throttle valve into a first branch for supplying air to certain of the engine cylinders and a second branch for supplying air to the remainder of said engine cylinders;

(b) an exhaust passage through which exhaust gases are discharged from said engine cylinders to the atmosphere;

(c) an EGR passage provided therein with an EGR valve for recirculation of exhaust gases from said exhaust passage into said second intake passage branch;

(d) valve means provided in said second intake passage branch for defining a chamber therewith in the closed position of said valve means;

(e) passage means having its one end opening into said intake passage upstream of said throttle valve and the other end opening into said chamber; and

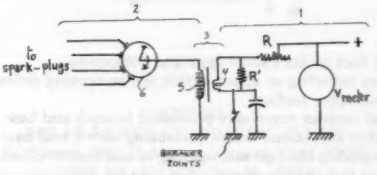
(f) control means responsive to low engine loads for cutting off the supply of fuel for said remainder of said engine cylinders, opening said EGR valve, and closing said valve means.

4,284,057

ANTIPARASITIC IGNITION DEVICE FOR CARS

Ferdy P. Mayer, 18, rue Thiers, 38000 Grenoble, France

Continuation of Ser. No. 870,541, Jan. 18, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 95,139
Claims priority, application France, Jan. 20, 1977, 77 01500
Int. Cl.³ F02P *3/06*
U.S. Cl. 123—633 **30 Claims**



1. In an internal combustion engine ignition system of the type including: a DC power source supplying current through an ignition coil and a distributor to the engine's spark plugs; the coil having a low voltage primary winding circuit connected to the DC source, and a high voltage secondary winding circuit connected to the distributor; and means for repetitively interrupting the current flowing through the primary circuit; the improvement comprising the combination of:

frequency selective ignition wires interconnecting the distributor and the spark plugs, said wires exhibiting low resistance to direct and lower frequency currents below the radio frequency range and high resistance to higher current frequencies in the radio frequency range; and

resistor means electrically connected to the ignition coil for reducing the ignition power flowing through the secondary circuit to the minimum value required for substantially zero ignition reserve, thereby minimizing both the wear on the spark plugs and also secondary parasitic radiations, both of which would otherwise occur but for the presence of said resistor means, said zero ignition reserve being a value of ignition power which is the minimum necessary for efficient spark ignition.

10. A method of improving the ignition efficiency of, and reducing the radio frequency interference radiation from, an internal combustion engine designed for operation with an ignition system including an ignition coil having a high voltage secondary circuit containing resistive components, including spark plugs and ignition wires, comprising the steps of:

replacing the resistive ignition wires with frequency selective ignition wires which have the characteristic of presenting a low resistance to direct currents and lower frequency currents while attenuating radio frequency currents;

replacing the remaining resistive components with standard, non-resistive components; and

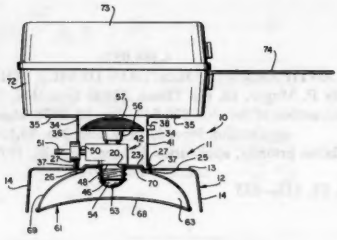
connecting in circuit with the ignition coil a separate resistor having an optimum resistance value such that the ignition current flowing through said secondary circuit to the spark plugs is large enough efficiently to fire the spark plugs and low enough to minimize both the wear of the spark plugs and also secondary parasitic radiations.

4,284,058

BACKPACKER'S STOVE APPARATUS

William R. Lütz, Chamblee, Ga., assignor to Conceptual Factors, Inc., Atlanta, Ga.

Filed Jun. 4, 1979, Ser. No. 45,131
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—9 R **13 Claims**



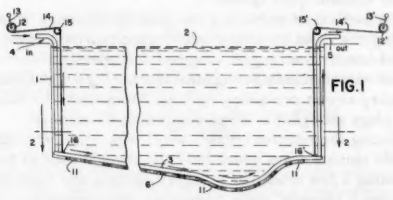
1. A backpacker's stove apparatus comprising:
a base including an upper surface and an opening defined in said upper surface;
a fuel canister removably positioned beneath said base;
a valve and burner means protruding above said base and extending through said opening of said base to connect to said fuel canister beneath said base for selectively releasing fuel from said fuel canister;
a foldable pot support mounted on top of said base, said pot support including a plurality of wing plates pivotably attached to the top surface of said base, each said wing plate including a first planar section pivotably attached at one of its edges to said upper surface of said base and being pivotable relative to said upper surface between a down position and an up position, each said wing plate further including a second pot engaging portion extending approximately perpendicular to said first planar section,
whereby said wing plates in said up position form a windscreen about said valve and burner means and a pot support to hold a pot above said valve and burner means, and said wing plates are pivotable to said down position for packaging and storage.

4,284,059

HEAT STORAGE AND HEAT EXCHANGER

Harry E. Thomason, 6802 Walker Mill Rd., SE., Washington, D.C. 20027

Filed Sep. 3, 1976, Ser. No. 720,355
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **13 Claims**



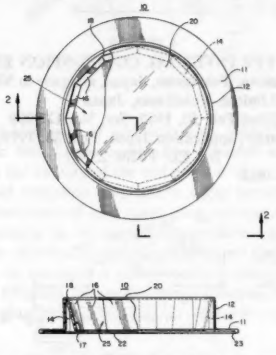
1. In a pool or similar container of liquid having side and a bottom, heat exchanger—heat storage and pool-safety apparatus located adjacent to the bottom of the pool or similar container, said heat exchanger and heat storage apparatus comprising substantially liquid-tight upper and lower skin members substantially sealed to each other at limited areas in a quilted-like pattern defining areas for storage of warmed or cooled fluid and forming passages for flow or fluid through those areas, an inlet connection for introduction of warm or cool fluid to said areas for storage and circulation therethrough, an outlet connection for exit of fluid from said areas, said heat exchanger-heat storage—safety apparatus serving to reduce injuries to pool users, serving as heat storage apparatus when filled, and serving as a heat exchanger to impart heat to the liquid in the pool when the temperature of the fluid in said apparatus exceeds that in the pool, or to extract heat when the temperature of the fluid in said apparatus is lower than that in the pool.

4,284,060

FLOATING SOLAR POOL HEATER

James E. McCluskey, Pipersville, Pa., assignor to Philadelphia Rivet Company, Doylestown, Pa.

Filed Jun. 18, 1980, Ser. No. 160,826
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **4 Claims**



1. A floating solar pool heater which comprises a body having
an outer rim,
a vertical wall extending upwardly from said rim,
an angularly inclined inner wall attached to and extending downwardly and inwardly of said outer wall,
a transparent cover extending over the top of the outer wall and secured thereto,
said inner wall being formed of non-circular segments and having a reflective coating thereon, and
a heat conducting bottom plate attached to said rim and forming with said cover and said walls an enclosed space.

4,284,061

APPARATUS FOR COLLECTING SOLAR ENERGY

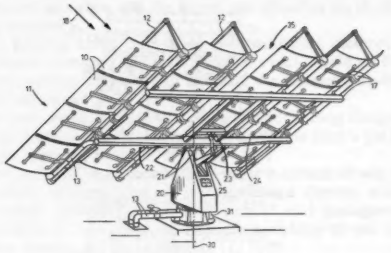
Karl Wildenrotter, Munich, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,150
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835348
Int. Cl.³ F24J *3/02;* H01Q *3/00;* G02B *5/08*
U.S. Cl. 126—418 **8 Claims**

1. Apparatus for collecting solar energy, comprising:
a pedestal support;
a collector member having a solar-energy collector surface and a substantially centrally-located gap having a width substantially equal to the width of said pedestal support, said collector member being supported by said pedestal support for pivotal movement about a horizontal axis over an angle of about 180°, between an exposed position wherein said collector surface is oriented toward the sun and a substantially horizontally oriented sheltered position wherein said collector surface is oriented toward the

earth, with said pedestal being engaged by said gap during pivoting into said sheltered position; and

means for pivoting said collector member between said exposed and sheltered positions about said horizontal axis, said pivoting means being accommodated at least in part within said pedestal and comprising a first double-ended lever comprised of first and second lever arms rigidly



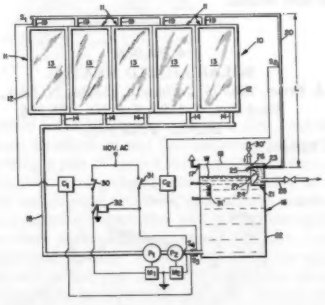
connected together at an angle less than 180°, said first lever being pivotably mounted between its ends on said pedestal, a second double-ended lever having its first end pivotably connected to the second end of said first lever and its second end pivotably connected to said collector means, and means for actuating the first end of said first lever to pivot said collector member.

4,284,062

SOLAR COLLECTOR SYSTEM

Elro M. Swindle, P.O. Box 628, Millbrook, Ala. 36054

Filed Oct. 30, 1978, Ser. No. 955,600
Int. Cl.³ F24J 3/02
U.S. Cl. 126—423 **6 Claims**



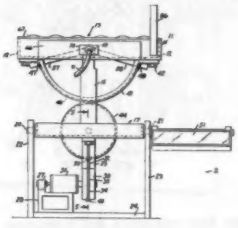
1. In a solar collector system wherein solar collector units adapted to contain water to be heated by the sun are connected to a lower level reservoir by water feed and return conduit means that are free of valves and in substantially all respects incline downwardly from the collector units to the reservoir, pump means in the feed conduit means for continuously circulating water from the reservoir through the collector units and capable of substantially unrestrictedly passing water therethrough or thereby when idle, means responsive to the temperature of the water heated by the sun for controlling operation of said pump means including means whereby the pumping force of said pump means is automatically reduced a predetermined amount or stopped when there is a predetermined difference in temperature between water heated by the sun leaving said collector units and water entering said feed conduit means from said reservoir and means having no moving parts whatsoever, operable when said pump means is stopped, for venting said system to thereby permit water to drain from said collector units and said water feed and return conduit means into said reservoir, said venting means comprising a relatively small volume catch basin at said reservoir open to said return conduit means and adapted to overflow into said reservoir, said catch basin being filled to a level above the entrance of said return conduit means while said pump means are maintaining the closed water circuit, and weep hole means in the wall of said catch basin whereby when the pump means stop said catch basin drains into the reservoir only slowly to delay the water level in said catch basin from dropping below the entrance of said return conduit means whereupon, when water drops below said return conduit means entrance, said return conduit means is vented and subsequent draining of said collector units into said reservoir occurs.

4,284,063

SOLAR POWER GENERATING SYSTEM

John C. Watson, 2601 E. Monroe, Orange, Calif. 92667

Filed Apr. 23, 1979, Ser. No. 32,131
Int. Cl.³ F24J 3/02
U.S. Cl. 126—425 **11 Claims**



1. Apparatus for deriving energy from the sun comprising:

a closed fluid circuit for a fluid,

said fluid being normally in liquid form and having a low boiling temperature,

said circuit including an expansion conduit and a fluid-operated motor arranged in series,

a focusing device locatable in a focusing position to focus rays of radiant energy from the sun onto said expansion conduit whereby to transform said liquid into a gaseous fluid for operating said motor,

means forming a base,

gimbal means on said base for pivotally supporting said focusing device, and

tracking means for pivoting said gimbal means to maintain said focusing device in said focusing position in different positions of said base relative to the sun, said tracking means comprising:

drive means for said gimbal means,

a pair of sensing devices for sensing rays of radiant energy from the sun and for emitting signals proportional to the amount of said rays falling thereon,

each of said sensing devices receiving a maximum amount of said rays when directly facing the sun,

means mounting such devices on said gimbal means to face in diverging directions, and

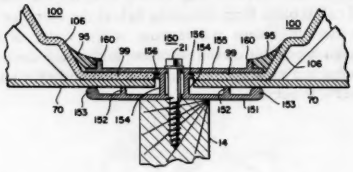
means responsive to said emitted signals from said sensing devices for actuating said drive means.

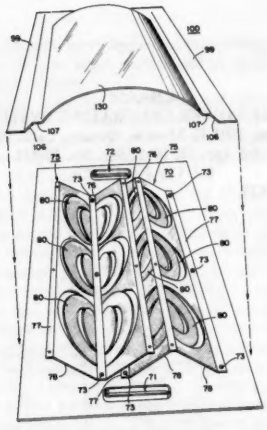
4,284,064

SOLAR HEATING SYSTEM

Stephen C. Midouhas, 127 W. Kimberly Ave., Brant Beach, N.J. 08008

Continuation-in-part of Ser. No. 831,473, Sep. 8, 1977, abandoned. This application Nov. 28, 1978, Ser. No. 964,157
Int. Cl.³ F24J 3/02
U.S. Cl. 126—429 **13 Claims**





1. A solar heat collector for mounting on a portion of a building exposed to the sun comprising

a backing member of relatively rigid insulating sheet material mounted in position on the exterior portion of the building by at least one retainer means extending through said backing member and having a lower air inlet opening therethrough and an upper air outlet opening therethrough,

a plurality of spaced elongated finned heat absorber members mounted to said backing member and extending longitudinally along said backing member for passage of air therethrough for heating,

cover means enclosing said backing and said heat absorber means, and

said cover means including at least one bilaterally curved transparent dome with side marginal edges,

said retainer means being in strip form and engaging said side marginal edges of said cover means and retaining said backing in attached relation to the exterior portion of said building,

said retainer means including

a bottom plate having at least one upwardly extending rib in contact with said backing,

a top plate in engagement with the side edges of said dome retaining said backing between said dome and said backing plate,

at least one plate connecting said top and bottom plates, and

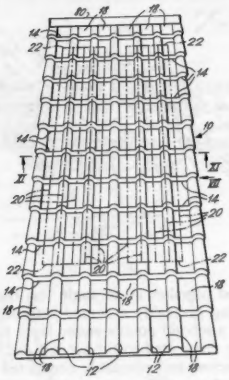
lag bolts engaged with said retainer and an exterior portion of said building.

4,284,065

STATIC SOLAR HEAT COLLECTORS

Kenneth O. P. Brill-Edwards, Swansea, Wales, assignor to Crescent Roofing Company Limited, Swansea, Wales

Filed Jun. 28, 1978, Ser. No. 919,956
Int. Cl.³ F24J 3/02
U.S. Cl. 126—432 **13 Claims**



1. A solar heat collector for a building comprising a self-supporting laminar GRP panel including

a substrate including longitudinal corrugations and having outer and under surfaces;

a stiffening beam former located lengthwise of the substrate and upstanding on the under surface thereof; and

a lamina of GRP overlying and coupled to said under surface and to said former;

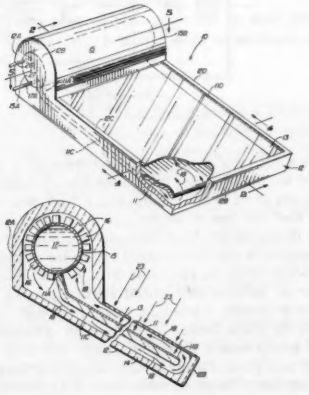
a fluid flow channel being defined between said substrate and said lamina.

4,284,066

SOLAR LIQUID HEATER

Robert J. Brow, 1843 N. Jefferson, Hobbs, N. Mex. 88240

Filed Jun. 4, 1980, Ser. No. 156,366
Int. Cl.³ F24J 3/02
U.S. Cl. 126—435 **10 Claims**



1. A flat plate solar energy converter comprising:

an insulating housing having a top plate formed of suitable solar transparent material for transmitting solar rays into said housing,

a solar ray absorber mounted within said housing adjacent said plate and arranged to extend longitudinally thereof for receiving the solar rays,

a liquid storage tank arranged in said housing at one end of said absorber,

one end of said absorber being connected along its length to the outer periphery of said tank,

said absorber being mounted in said housing to define between said plate and the top of said absorber an air flow passageway,

said housing being form-fitted with insulating material to closely surround said tank to define a part of said air flow passageway between said tank and the interior periphery of said housing,

said passageway defines an air flow in said housing along the top surface of said absorber and around at least a part of the outer periphery of said tank,

whereby solar rays absorbed by the top surface of said absorber will heat the air juxtapositioned thereto, which heated air will flow in said part of said passageways around at least a part of the outer periphery of said tank for heating the liquid therein.

4,284,067

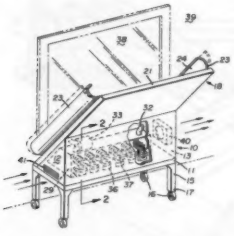
PORTABLE SOLAR HEATER

Louise J. Kilar, 192 Elm St., Masury, Ohio 44438

Filed May 15, 1980, Ser. No. 149,908

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—436 **8 Claims**



1. A portable solar heater comprising a first enclosure, a collector panel mounted on said first enclosure, said collector panel comprising a pair of spaced rectangular members, a side wall between said rectangular members, a plurality of baffles between said rectangular members, one of said panels being transparent, a secondary enclosure within said first enclosure, an insulation liner within said secondary enclosure, a tubular member positioned partially within said secondary enclosure and partially within said first enclosure, means for moving air through said collector panel and through said tubular member, means for retaining heat within said second enclosure and means for circulating air through said first enclosure over said secondary enclosure and said tubular member.

4,284,068

SOLAR HEAT COLLECTOR FOR GASSES

Charles F. Gunderson, 1622 N. Marconi Rd., Belmar, N.J. 07719

Continuation-in-part of Ser. No. 815,208, Aug. 13, 1977, Pat. No. 4,156,420, which is a continuation-in-part of Ser. No. 566,730, Apr. 10, 1975, abandoned. This application May 29, 1979, Ser. No. 42,962

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **11 Claims**

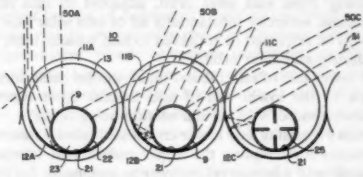
1. A solar heat collector for gasses comprising at least one elongated, tubular, outer casing of transparent material; means for positioning said outer casing in a fixed plane substantially perpendicular to the winter solar orbit, with one cylindrical side of said outer casing facing said solar orbit, whereby a substantial portion of the solar heat energy impinging on said outer casing is refracted towards a given portion within said tubular outer casing, said given portion being located between the axis of said cylindrical side of said outer casing and the other side of said outer casing;

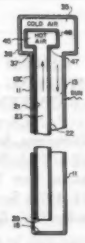
reflective means applied to said other side of said tubular outer casing;

a single, elongated tubular inner section of highly-conductive material, with a dark heat absorbing surface, positioned along said given portion within said outer tubular casing, said elongated tubular inner section having one side toward said solar orbit along the axis of said cylindrical side of said tubular outer casing, and an other side, away from said solar orbit, adjacent to said reflective means, whereby substantially all of said solar heat energy will be refracted or reflected to said tubular inner section during said solar orbit;

a gaseous medium contained within said elongated tubular section, and

means for connecting said elongated tubular section to a system for using heated gasses.





7. A solar heat collector for gasses comprising at least one elongated, tubular, outer casing of transparent material; means for positioning said outer casing in a fixed plane substantially perpendicular to the winter solar orbit, with one cylindrical side of said outer casing facing said solar orbit, whereby a substantial portion of the solar heat energy impinging on said outer casing is refracted towards a given portion within said tubular outer casing, said given portion being located between the axis of said cylindrical side of said outer casing and the other side of said outer casing;

reflective means applied to said other side of said tubular outer casing;

a single, elongated tubular inner section of highly-conductive material, with a dark heat-absorbing surface, positioned along said given portion within said outer tubular casing, said elongated tubular inner section having one side toward said solar orbit along the axis of said cylindrical side of said tubular outer casing, and an other side, away from said solar orbit, adjacent to said reflective means, whereby substantially all of said solar heat energy will be refracted or reflected to said tubular inner section during said solar orbit;

a gaseous medium contained within said elongated tubular section;

said tubular inner section having axial vanes of highly conductive material extending inwardly along the length of said tubular section to conduct heat away from said tubular inner section to provide a better contact between solar heated surfaces and said gaseous medium; and

means for connecting said elongated tubular section to a system for using heated gasses.

9. A solar heat collector for gasses comprising at least one elongated, tubular, outer casing of transparent material; means for positioning said outer casing in a fixed plane substantially perpendicular to the winter solar orbit, with one cylindrical side of said outer casing facing said solar orbit, whereby a substantial potion of the solar heat energy impinging on said outer casing is refracted towards a given portion within said tubular outer casing, said given portion being located between the axis of said cylindrical side of said outer casing and the other side of said outer casing;

reflective means applied to said other side of said tubular outer casing;

a single, elongated tubular inner section of highly-conductive material, with a dark heat-absorbing surface, positioned along said given portion within said outer tubular casing, said elongated tubular inner section having one side toward said solar orbit along the axis of said cylindrical side of said tubular outer casing, and an other side, away from said solar orbit, adjacent to said reflective means, whereby substantially all of said solar heat energy will be refracted or reflected to said tubular inner section during said solar orbit;

the lower end of said tubular inner section being terminated above the lower end of said tubular outer casing, said lower end of said tubular section being open;

means for sealing said lower end of said tubular outer casing; means for coupling the upper end of said tubular inner section to a hot air return system; and means for coupling the upper end of said tubular outer casing to a cold air input system, whereby said air being heated in said tubular inner section draws colder air down through said tubular outer casing.

4,284,069

WALL ELEMENT COMPRISING A SOLAR COLLECTOR WHICH IS DISPOSED BETWEEN TWO TRANSPARENT PANES

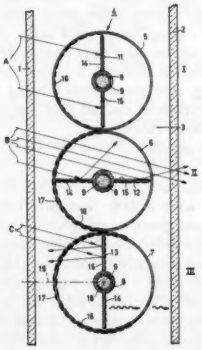
Horst Hörster; Wilhelm Hermann, both of Roetgen, and Klaus Klinkenberg, Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,217

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836542

Int. Cl.³ F24J *3/02;* F28F *1/14*

U.S. Cl. 126—438 **5 Claims**



1. A wall element comprising an outer transparent pane and an inner transparent pane parallel to each other and providing an enclosed space therebetween; a number of sealed and evacuated transparent tubes paraxially arranged in said space, adjacent transparent tubes being in contact with each other, the inner surface of the longitudinal half of each transparent tube facing the outer transparent pane being provided with a selective heat-reflective layer; a tube for a heat energy transport liquid arranged axially in each transparent tube in sealed relationship therewith; an elongate metal absorber plate rotatably mounted on each heat energy transport liquid tube in heat-conductive contact therewith, one surface of said absorber plate being provided with a non-selective absorbing layer and the other surface of said absorber plate being provided with a non-selective reflective layer; and means to selectively position the absorber plates (a) with their non-selective absorbing layers parallel to the outer transparent pane to provide an active solar heating system, (b) with their non-selective reflective layers extending transversely of the transparent panes and facing upwardly to provide a passive solar heating system, and (c) with their non-selective reflective surfaces parallel to the outer transparent pane to provide a radiation heating system.

4,284,070

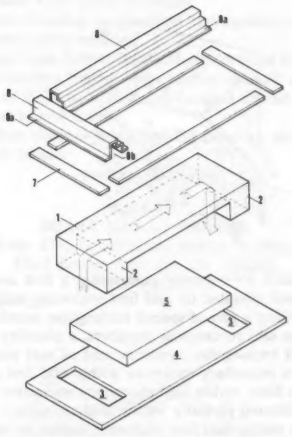
SOLAR ENERGY AIR ROOF

Douglad A. Wilke, 38 Roosevelt Ave., Glen Head, N.Y. 11545

Filed Feb. 6, 1980, Ser. No. 118,904

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **11 Claims**



1. In an apparatus for heating air with solar energy, wherein said air is heated in a chamber disposed below a glazing, the improvement wherein said apparatus comprises a kit capable of on-site assembly upon a planar-shaped base, wherein said kit comprises:

a. a prefabricated heating chamber to be placed upon said base, said chamber being essentially closed on its roof and along two parallel sides, said chamber being substantially closed on its floor, said chamber including a protruding segment extending downwardly from said floor and being open at its extremity, said protruding segment being of sufficient length to extend through a hole in said base when said kit is assembled;

b. a plurality of guide strips to be attached to the top of said base, wherein said strips surround the perimeter of said chamber when said kit is assembled;

c. a plurality of elongated pieces of rigid insulation;

d. a plurality of elongated glazing supports to be attached to the top of said base; wherein said supports are hollow and are open along the bottom thereof; wherein said insulation

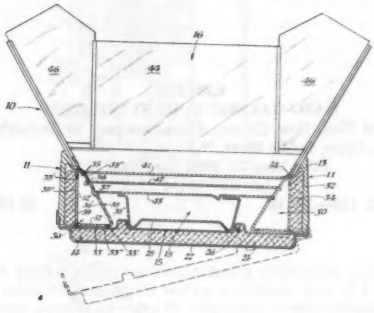
is sized to snuggly fit totally within each of said supports in a position recessed from said bottom of said supports, wherein said recess defines a slot in said bottom of said supports, wherein said slot is keyed to the size and shape of said guide strips so that said supports snuggly fit on top of as well as along the sides of said guide strips when attached to the top of said base; and wherein said supports provide a glazing frame when attached to the top of said base.

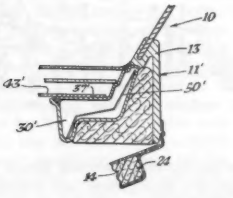
4,284,071

SOLAR OVEN

Hy Steinberg, 7200 NW. 78th St., Tamarac, Fla. 33319

Filed Jun. 11, 1979, Ser. No. 47,137
Int. Cl.³ F24J 3/02; F28F 13/00
U.S. Cl. 126—451 **5 Claims**





1. In a solar oven including an outer casing with insulated internal walls, an opening in one end thereof and a flat collector plate within the internal walls, and means for concentrating solar energy onto said collector plate to elevate the temperature of said collector plate and the compartment within said insulated internal walls to cook food received in said compartment, the improvement comprising:

a substantially evacuated inner casing means for insulating said compartment from said outer casing, said inner casing means including a first wall portion having a first end and a second end, said first wall portion contacting said insulated internal walls, and said outer casing means including a second wall portion connecting said first end and second end of said first wall portion to provide an evacuated chamber, whereby said inner casing means supports said collector plate on said second wall portion,

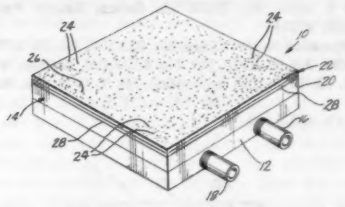
said second wall portion is thermally isolated from said first end and said second end of said first wall portion by a thermal break material.

4,284,072

SOLAR COLLECTORS WITH SOLAR PANELS HAVING A PARTICULATE FERRO-ALLOY SURFACE

James P. McKaveney, Claremont, Calif., assignor to Occidental Research Corp., Irvine, Calif.

Filed Oct. 26, 1978, Ser. No. 954,817
Int. Cl.³ F24J 3/02; F28F 13/18
U.S. Cl. 126—901 **27 Claims**



1. In a solar collector which includes a housing adapted to passage of a fluid therethrough and at least one solar panel for absorbing solar energy and transfer of such solar energy in the form of heat to a fluid passing through the housing, said solar panel being formed of a thermally conductive metal substrate and a solar energy receptive layer for exposure to solar energy, the improvement which comprises providing, as the solar energy receptive layer, a layer adherent to the thermally conductive metal substrate which layer contains at least one particulate, brittle ferro-alloy of high absorptivity and low infrared emissivity, the brittle ferro-alloy comprising, based on the total weight of the ferro-alloy,

(i) a first alloyed constituent of from about 5 to about 95% by weight iron and

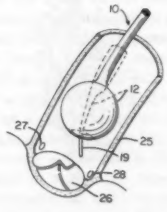
(ii) a second alloyed constituent of at least about 5% by weight of an element selected from the group consisting of manganese, carbon, calcium, chromium, phosphorus, and silicon.

4,284,073

METHOD AND APPARATUS FOR PUMPING BLOOD WITHIN A VESSEL

Horst E. Krause, 8720 Subarcreek Point, Dayton, Ohio 45459, and Edwin L. Stanley, 2566 S. Patterson Blvd., Dayton, Ohio 45409

Continuation of Ser. No. 841,017, Oct. 11, 1977, Pat. No. 4,154,227. This application May 10, 1979, Ser. No. 37,766
The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.
Int. Cl.³ A61M 1/03
U.S. Cl. 128—1 D **13 Claims**



1. A method for perfusing a body organ or tissue containing a body fluid, comprising the steps of forming a catheter having an inflatable portion and enclosing a fluid adapted to be pulsated, inserting the inflatable portion of the fluid-filled catheter into a vessel within the organ or tissue, and pulsating the fluid enclosed within the catheter at a frequency substantially

greater than the normal pulsation frequency of the heart for transmitting pulsatile energy and for producing an amplified dynamic pressure wave form in the body fluid in response to inflation and deflation of the inflatable catheter portion to increase the penetration of the body fluid into the microcirculatory resistance vessels within the body tissue or organ.

4,284,074

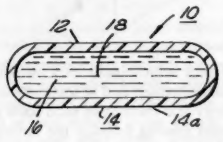
IUD ARRANGEMENT

Seth T. Shaw, Jr., 30036 Via Borica, Rancho Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 928,106, Jul. 26, 1978, Ser. No. 928,093, Jul. 26, 1978, Pat. No. 4,233,698, and Ser. No. 927,765, Jul. 25, 1978. This application Jul. 9, 1979, Ser. No. 55,902

Int. Cl.³ A61F *5/46*

U.S. Cl. 128—130 **46 Claims**



1. In an intrauterine device of the type insertable in the uterus and having a surface contacting the uterus and first walls defining a fluid-receiving cavity in at least a portion thereof, the improvement comprising, in combination:

one of a concentrated fluid solution and suspension of at least one drug in said cavity and said at least one drug of the type providing an antifibrinolytic, a reversible antifertility, and an antiproteolytic effect; and

said first walls of said intrauterine device comprising a polymer having a predetermined permeability to said at least one drug;

said at least one drug comprises at least a guanidine, and

whereby, said predetermined permeability of said first walls controls the release rate of said drug from said cavity.

4,284,075

DIVING HEADGEAR FOR USE IN RETURN-LINE DIVING SYSTEMS

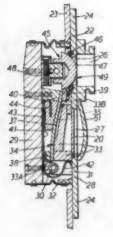
Alan Krasberg, 24 Devanha Gardens, Aberdeen AB1 2UU, Scotland

Filed Jun. 14, 1979, Ser. No. 48,700

Claims priority, application United Kingdom, Jun. 17, 1978, 27192/78

Int. Cl.³ A62B *7/00, 9/02;* **B63C** *11/14*

U.S. Cl. 128—201.27 **10 Claims**



1. In return-line diving apparatus, exhaust valve means for regulating the flow of used gas from the diver into the return line comprising in combination:

a. a base structure having inlet and outlet openings therein and an orificed seat between the openings;

b. a flap pivotally mounted on the base structure and extending radially outwards over the openings for movement towards and from the seat;

c. a collapsible peripheral wall connecting the flap to the base structure and forming with the flap a collapsible housing containing the orificed seat and exposable to the ambient water; and

d. a flexible membrane in the housing extending radially outwards between the seat and the flap and connected at its inner and outer ends respectively to the base structure and to the flap so that when the flap pivots in response to the diver's breathing the membrane progressively engages with and disengages from the seat to close and open progressively the orificing of the seat.

4,284,076

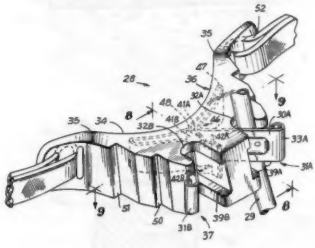
NASO-GASTRIC TUBE STABILIZER

Richard Hall, New Canaan, Conn., assignor to Technalytics, Inc., Upper Saddle River, N.J.

Filed May 23, 1980, Ser. No. 152,593

Int. Cl.³ A61M *25/02*

U.S. Cl. 128—207.18 **10 Claims**



1. In a naso-gastric tube stabilizer device for engaging an exposed section of a naso-gastric tube extending out of a patient's nostril, the device including:

a base adapted to lie against the upper lip of a patient and having a central part with a bearing surface thereon,

spring means secured on said base for releasably urging said tube section against said bearing surface, and

connection means coupled to said base for releasably engaging said base to the patient's head and for holding said base such that the spring means and the bearing surface are oriented to secure said tube section in substantial alignment with the nostril of a patient, the improvement wherein said base comprises a support section which includes thereon said bearing surface, and said spring means comprises a body part secured to said base, and an arm part extending from said body part and overlying said bearing surface, said body and arm parts of the spring configured to sandwich between them said support section of the base, whereby resilient force of the arm part applied to said bearing surface or said section of the tube adjacent said bearing surface causes compression of said support section between said arm and body parts without stressing or distorting the remainder of said base.

4,284,077

SUCTION INJECTOR HAVING AN ADJUSTABLE DOSING DEVICE

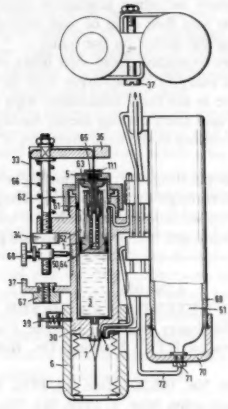
Wolfgang Wagner, Exerzierstrasse 1, 1 Berlin 65, Fed. Rep. of Germany

Division of Ser. No. 933,136, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 793,951, May 5, 1977, Pat. No. 4,114,619, which is a continuation-in-part of Ser. No. 634,741, Nov. 21, 1975, abandoned. This application Nov. 9, 1979, Ser. No. 93,615

Claims priority, application United Kingdom, Nov. 19, 1974, 49989/74; Nov. 19, 1974, 49990/74

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—215 **15 Claims**



1. A suction injector having a dosing mechanism, comprising a tubular container for storing a multiple dose of a liquid medicine; a piston arranged for movement in said container; an exchangeable cannula connected to one end of said container; a container housing adapted for accommodating said container; a suction cup attached to one end portion of said container housing to pull up the skin of a patient against said cannula; an underpressure generator including a pressure gas container and a pump connected to said suction cup, said under-pressure generator being attached to said container housing and communicating with said suction cup; pressure controlling means having a control valve and disposed between said suction cup and said underpressure generator to control the pressure conditions in said suction cup; a non-return valve coupled between said under-pressure generator and said suction cup to maintain under-pressure in said cup when the suction from said pump is interrupted; and a dosing mechanism arranged on said container housing and coupled to said piston in said container to permit an incremental movement of the piston toward said cannula, the end of said container housing opposite said cannula being hermetically sealed by a closure cap and the space resulting between the cap and the upper surface of said piston communicating through said control valve with said pressure gas container in said under pressure generator to move said piston about a predetermined increment.

4,284,078

FOUR IN ONE WATER HYGIENE DISPENSER

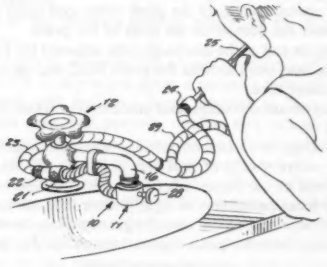
Paul D. Pace, 347 72nd St., Brooklyn, N.Y. 11209

Filed Mar. 17, 1980, Ser. No. 130,840

Int. Cl.³ A61M *3/00*

U.S. Cl. 128—229 **1 Claim**

1. A water hygiene dispenser comprising an adapter for fixing to a water faucet, said adapter comprising a main body portion having a threaded opening, a substantially vertical passageway in said body portion for passage therethrough of water from the water faucet, and a substantially horizontal passageway in said body portion having a first end in fluid communication with said vertical passageway at a position approximately at the center of said vertical passageway, and a second end remote from said first end; said vertical passageway having a cross-sectional area which is less than the cross-sectional area of said threaded opening, said vertical passageway also having a first end in fluid communication with said threaded opening and a second end remote from said first end and flush with the exterior wall surface of said body portion so that water from the water faucet may exit at said second end; said adapter further having a push button control valve mounted within said main body portion and in operational connection with said vertical passageway, said control valve being mounted on a side of said vertical passageway opposite to the side which is connected to said first end of said horizontal passageway, said control valve also being positioned along said vertical passageway at a location lower than said first end of said horizontal passageway in a direction taken from said first end of said vertical passageway toward said second end of said vertical passageway, said control valve directing the flow of water from the water faucet through said first end of said horizontal passageway when said control valve is in a first extended position, and when in a second retracted position allows for the water from the water faucet to exit through said second end of said vertical passageway; said adapter further comprising a threaded collar for reception in said threaded



opening, said threaded collar having an outer cross-sectional area greater than the cross-sectional area of said vertical passageway, said collar being positionable on a water faucet to mount said main body portion thereto; a first hose having a first end mounted to said main body portion at said second end of said horizontal passageway, said first end of said first hose being in fluid communication with said second end of said horizontal passageway, and a second end remote from said first end; a second hose having a first end connected to said second end of said first hose and a second end remote from said first end; means for connecting said first end of said second hose to said second end of said first hose; clip means for attaching said first hose to a water faucet, said clip means being positioned between said first and second ends of said first hose; a special attachment mounted at said second end of said second hose for spraying and directing water to a chosen location; means for connecting said attachment to said second end of said second hose; a third hose having a first end in fluid communication with said second hose at a location between said first and second ends of said second hose, and a second end remote from said first end; a plurality of clip means for mounting said third hose to a wall; a mounting rack for winding thereon a portion of said third hose near said second end, said mounting rack having a clip for attaching said rack to a water closet; and means for connecting said first end of said third hose to said second hose for fluid communication therewith, whereby water from a water faucet may be directed to an attachment.

4,284,079
METHOD FOR APPLYING A MALE INCONTINENCE DEVICE

Edwin L. Adair, 191 E. Orchard, Littleton, Colo. 80123

Filed Jun. 28, 1979, Ser. No. 52,865
Int. Cl.[3] A61F *5/44*
U.S. Cl. 128—295 2 Claims

1. A method for attaching an incontinence device to the penis of a male using a discharge tube therewith, comprising the steps of:

providing a discharge tube and a flexible planar sheet having a closed circumferentially planar rim attached in an overlying relationship to said planar sheet with an inner periphery and an outer periphery;

seating said inner periphery of said rim immediately adjacent the coronal sulcus of the penis while said outer periphery of said rim surrounds the shaft of the penis;

placing an end of the discharge tube adjacent the penis head;

folding said sheet around the penis head and the end of the drainage tube;

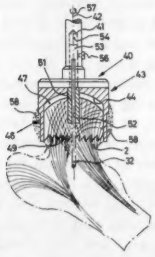
forming secured portions and unsecured portions of said rim; and

connecting the unsecured portions of said rim together along the entire width of said rim portions, the width being defined as the distance between said outer periphery and said inner periphery, to tightly secure the device and the discharge tube to the penis to greatly minimize the escape of fluid from the penis except through the discharge tube.

4,284,080
APPARATUS FOR THE WORKING OF A BONE WHICH IS TO BE PROVIDED WITH A SHELL PROSTHESIS

Günther Rehder, Stuhr, Fed. Rep. of Germany, assignor to Orthoplant Orthopädische Implantate GmbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 42,870
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834297
Int. Cl.[3] A61F *17/32;* A61B *17/16, 17/14;* A61F *5/04*
U.S. Cl. 128—305 11 Claims



1. Apparatus for the working of a bone, especially the femur head of a human hip joint, which bone is to be provided with a shell-shaped endoprosthesis, comprising:

a drivable drive shaft having a free end;

a pot-shaped cutting head arranged on the free end of said drive shaft, said cutting head has an inner end face which faces away from said drive shaft free end and surrounds the axis of said drive shaft, and a circular free edge on said cutting head which edge is concentric with the axis of said drive shaft;

first cutting means arranged at the inner end face of said cutting head for defining an arcuately shaped surface on the bone which surface corresponds to the inner surface of the shell-shaped endoprosthesis which is to be applied to the bone;

second cutting means including uniformly spaced cutting teeth arranged at said free edge of said cutting head for defining a cylindrical jacket on the bone;

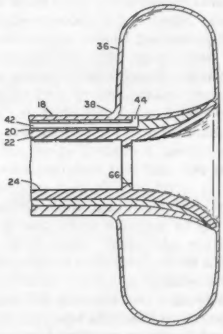
third cutting means extending from said inner end face of said cutting head away from said drive shaft for providing a cylindrical bore in the bone concentric with the axis of said drive shaft, said third cutting means having a central guiding bore extending in the axial direction of said drive shaft; and

a guiding pin for cooperating with said guiding bore to guide said cutting head through the bone, said guiding pin to be arranged in a bone section treated such that said pin protrudes from the bone and is alignable with said guide bore.

4,284,081
URINARY RETENTION CATHETER

Richard F. Kasper, 104 Sentry Hill Rd., Monroe, Conn. 06468, and Joseph R. Carvalko, R.D. 1 Redwood Dr., Bethel, Conn. 06801

Continuation of Ser. No. 755,259, Dec. 29, 1976, Pat. No. 4,148,319. This application Mar. 1, 1979, Ser. No. 16,350
The portion of the term of this patent subsequent to Apr. 10, 1998, has been disclaimed.
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—349 B 3 Claims



1. A retention drainage catheter adapted to be inserted into and retained in the bladder for the continuous drainage of waste material therefrom, said catheter comprising:

A. an elongate cannula formed of a flexible and pliant material and having both distal and proximal ends, the length of said cannula being such that said distal end is disposed within the bladder and the proximal end is disposed exteriorily of the urethra,

B. said cannula having an inner tubular wall surface defining a drainage lumen which extends from said distal end of said cannula substantially to said proximal end thereof, said cannula being tapered adjacent said distal end thereof to form a gradually widening portion from said distal end to facilitate passage of said cannula through the urethra, said tapered portion of said cannula commencing at said

distal end and extending toward said proximal end of said cannula,

C. said distal end of said cannula defining an unobstructed opening the cross-sectional area of which is substantially equal to the cross-sectional area of said drainage lumen and which lies in a plane substantially perpendicular to the longitudinal axis of said drainage lumen so as to communicate the interior of the bladder directly with the full cross-sectional area of said drainage lumen at said distal end of said cannula whereby waste material in the bladder flows directly into said drainage lumen at said distal end of said cannula and instrumentation is introduced into the bladder through said drainage lumen,

D. means formed on said inner tubular wall surface adjacent to but spaced from said distal end of said cannula and defining a portion of said drainage lumen of different diameter than the diameter of the rest of said drainage lumen thereby forming an abutment means for a stylet used to insert said catheter, and

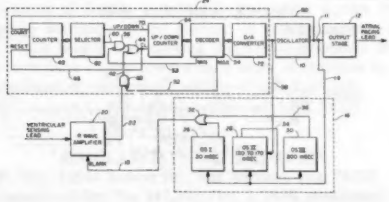
E. expandable means connected to the outer wall surface of said cannula adjacent said distal end thereof for retaining said distal end within the bladder after passing through the urethra, said expandable means comprising an inflatable balloon surrounding said cannula adjacent said distal end thereof, said inflatable balloon being defined by an outer layer of flexible material connected to said distal end of said cannula and to a portion of said cannula spaced from said distal end but being otherwise unconnected thereto, said portion of said cannula being located at least as far from said distal end of said cannula as the widest portion of said gradually widening portion of said cannula so that said inflatable balloon extends at least over the length of said gradually widening portion.

4,284,082

VENTRICULAR SYNCHRONIZED ATRIAL PACEMAKER AND METHOD OF OPERATION

Hermann D. Funke, Bonn, Fed. Rep. of Germany, and Lodewijk-Jozef Herpers, Kerkrade-West, Netherlands, assignors to Medtronic B.V.Kerkrade, Kerkrade-West, Netherlands

Filed Dec. 12, 1979, Ser. No. 102,684
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **25 Claims**



1. A synchronous heart pacemaker comprising:

atrial pacing pulse generator means for generating stimulating pulses adapted to be applied to the atrium at an atrial pacing rate;

means for sensing ventricular heart depolarizations;

means for timing the interval between atrial pacing pulses and ventricular depolarizations and for producing a clock signal when ventricular depolarizations occur out of synchronism with atrial pacing pulses; and

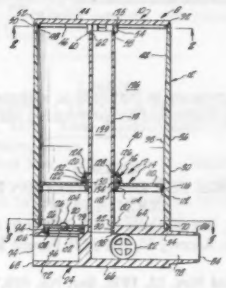
atrial pacing rate adjusting means responsive to the clock signal for adjusting the atrial pacing rate to restore synchrony.

4,284,083

INHALATION INCENTIVE DEVICE

Victor E. Lester, P.O. Box 608, Sonora, Calif. 95370

Filed May 29, 1979, Ser. No. 42,862
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—725 **23 Claims**



1. An inhalation therapy device for encouraging prescribed breathing, by a patient, comprising:

a moveable indicator responsive to patient inhalation flow rates;

a chamber containing said indicator, said chamber including means for determining the position of said indicator within said chamber;

first means for drawing patient inhalation gas from said chamber;

second means to communicate to said chamber a volume of gas which is dependent upon a patient's inhalation flow rate with said indicator being adapted to float in said chamber upon and partially confine said volume of gas, said second means preventing gas flow from said chamber when patient inhalation gas flow ceases; and

a flow passage through which said confined volume of gas flows after said patient gas flow ceases to reduce the volume of gas upon which said indicator floats thereby causing said indicator to sink in said chamber, said flow passage having varying cross-sectional flow area to cause said indicator to sink at a non-uniform rate whereby said flow passage and said confined volume of gas retards the sink of said indicator.

4,284,084

SYRINGE ASSEMBLY

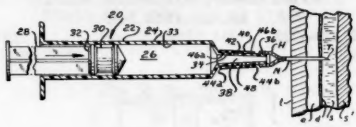
William J. Binard; Anthony J. Ciarico, both of Cary; Leonard R. Anglada, Arlington Heights, and Bhupendra C. Patel, Elgin, all of Ill., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 53,482, Jun. 29, 1979, Pat. No. 4,240,430, which is a continuation of Ser. No. 853,962, Nov. 22, 1977, abandoned, which is a division of Ser. No. 776,147, Mar. 10, 1977, Pat. No. 4,074,714, which is a division of Ser. No. 702,164, Jul. 2, 1976, Pat. No. 4,030,497, which is a division of Ser. No. 627,982, Nov. 3, 1975, which is a continuation-in-part of Ser. No. 509,757, Sep. 27, 1974, abandoned. This application Aug. 21, 1980, Ser. No. 180,071
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—748 **4 Claims**

1. A method of locating the epidural space of a patient for performing an epidural anesthesia procedure, comprising the steps of:

advancing the tip of a hollow needle through the body tissue toward the epidural space of the patient; and

actuating an indicator communicating with the needle when the needle tip is located in the epidural space responsive to



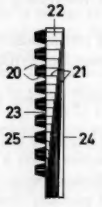
decreased pressure in the space to indicate that the needle is properly positioned for performing the procedure.

4,284,085

ELECTRODE FOR IMPLANTATION INTO THE COCHLEA (II)

Carl C. Hansen, Sadolinsgade 114 B, DK-5000 Odense, and Ole M. Lauridsen, Kaervej 13, DK-3520 Farum, both of Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,756
Claims priority, application Denmark, Nov. 22, 1977, 5167/77
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **8 Claims**



1. An implantable flexible electrode for implantation into the cochlea and disposed to establish electrical communication with the auditory nerves of the human ear, comprising: an elongate foil-like support member of a flexible electrically insulating material; a pattern of electrically conductive paths of a material inert to body fluids and tissue applied to a planar surface of said support member, said pattern extending along said planar surface and terminating each of said paths in an enlarged exposed contact area, and wherein the part of the support member to be accommodated in the cochlea has a natural curvature in the longitudinal direction of the support member which corresponds to the curvature of the cochlea wall containing the nerve endings in the particular turn of the cochlea into which it is to be inserted; means for releasably prestressing said support member to attain a temporary curvature to facilitate insertion into the middle of said turn of the cochlea; said prestressing means being capable of being released when the curved support member is secured in place in the particular cochlea turn to permit said member to return to its natural curvature condition to establish optimum engagment between the nerve endings and the exposed electrode contact areas.

4,284,086

THRESHING AND SEPARATING APPARATUS

Dennis W. Williams, Rte. 1, Box 51, Toston, Mont. 59643

Filed Sep. 22, 1980, Ser. No. 189,123
Int. Cl.³ A01F *7/06, 12/18*
U.S. Cl. 130—27 M **8 Claims**

1. Apparatus for threshing a grain material and separating the threshed grain from the residual grain material comprising:

(a) an elongated supporting frame,

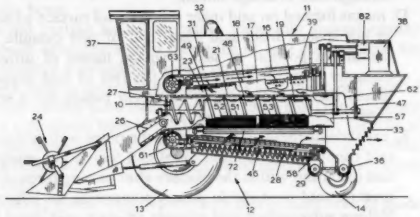
(b) a threshing unit including a rotatable threshing cylinder and an associated combination concave and grate member mounted on said frame to form with the threshing cylinder a threshing zone having an inlet and an outlet,

(c) means for supplying the grain material to be threshed into the inlet of said threshing zone,

(d) a shroud on said frame enclosing said threshing unit and having an outlet extended axially of said threshing cylinder,

(e) a rotatable grain separating cylinder having perforations in the peripheral surface thereof,

(f) means for rotatably supporting said separating cylinder on said frame and about said shroud in a coaxial relation with said threshing cylinder to form with said shroud a



chamber for receiving threshed material from said axially extended outlet for rotation with said separating cylinder, with the grain rotatable with said separating cylinder being moved by centrifugal force through the perforations therein,

(g) means for agitating the threshed material rotating with said separating cylinder to maintain open the perforations therein,

(h) means for removing chaff and light material from said receiving chamber, and

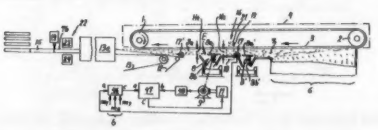
(i) means for collecting and removing the clean grain discharged from the perforations in said separating cylinder.

4,284,087

METHOD AND APPARATUS FOR PRODUCING AN ELONGATED WRAPPED ROD FROM FIBERS, ESPECIALLY TOBACCO SHREDS

Joachim Reuland, Neu Börnsen, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,351
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833124
Int. Cl.³ A24C *5/14, 5/39*
U.S. Cl. 131—84 C **30 Claims**



1. A method of making an elongated rod-like filler from fibers, especially tobacco shreds, comprising the steps of continuously forming from the fibers an elongated stream which contains a surplus of fibers and advancing the stream lengthwise; equalizing the advancing stream including removing the surplus of fibers; densifying and wrapping the equalized stream to convert the stream into the filler; conveying a current of a gaseous fluid transversely across the advancing stream prior to said equalizing step; generating a first signal in dependence on the resistance of the stream to the flow of said fluid; generating a second signal denoting the height of the equalized stream prior to said densifying step; correcting said first signal in accordance with a function which is indicative of a desired

rigidity of the filler and represents a predetermined relationship between said first and second signals; and controlling said equalizing step in dependence on the corrected first signal to maintain the rigidity of the filler at a constant value.

4,284,088

METHOD OF MONITORING FILTER ROD SECTIONS IN FILTER TIPPING MACHINES

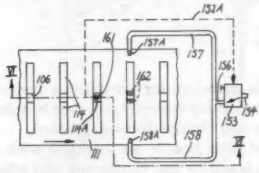
Peter Brand, Hamburg; Peter Pinck, Gross-Hansdorf, and Anton Baier, Wentorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 945,696, Sep. 25, 1978, Pat. No. 4,238,999. This application Jul. 10, 1980, Ser. No. 168,187

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742856

Int. Cl.³ A24C *5/47, 5/52, 5/58, 5/60*

U.S. Cl. 131—280 **10 Claims**



1. In a method of producing filter cigarettes or analogous smokers' products wherein one end of a tobacco-containing first rod-shaped component is connected with a coaxial rod-shaped filter component by an adhesive-coated uniting band which is convoluted around the filter component and the adjacent end of the first component, the steps of transporting successive pairs of spaced-apart first components sideways along a first path so that the first components of each pair define a gap having a width at least equal to the length of a filter component of double unit length; transporting a series of discrete filter components of double unit length along a second path and introducing successive filter components of said series into a first portion of said first path so that each filter component is located in the gap between a pair of first components; draping discrete adhesive-coated uniting bands around successive filter components of double unit length and the adjacent ends of the first components of the respective pairs in a second portion of said first path; monitoring said second path ahead of said second portion of said first path for the presence of filter components of double unit length; generating signals in response to detection of the absence of filter components of double unit length; and moving the first components of the respective pairs axially toward each other in response to said signals ahead of said second portion of said first path.

4,284,089

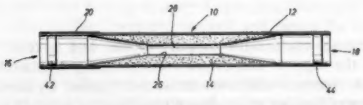
SIMULATED SMOKING DEVICE

Jon P. Ray, 12544 Judson Rd., San Antonio, Tex. 78233

Continuation of Ser. No. 947,373, Oct. 2, 1978, abandoned. This application Apr. 2, 1980, Ser. No. 136,420

Int. Cl.³ A24F *47/00*

U.S. Cl. 131—270 **34 Claims**



1. A simulated smoking device for non-burning use, comprising:

a container defining a passageway therethrough;

an absorbent material disposed within said container and communicating with said passageway;

a nicotine-bearing material absorbed into said absorbent material;

and

a constriction within said passageway formed by said absorbent material, said device being adapted to release nicotine vapors into air drawn through said passageway by the user of said device.

4,284,090

COMBING CYLINDER OF COMBER

Hiroyuki Kanai, 15-go, 3-ban, Matsunouchi-Cho, Ashiya City, Hyogo Prefecture, Japan

Filed Nov. 1, 1979, Ser. No. 90,307

Claims priority, application Japan, Nov. 6, 1978, 53-137053; Jun. 11, 1979, 54-73798; Jun. 11, 1979, 54-73799

Int. Cl.³ A45D *2/50*

U.S. Cl. 132—11 R **10 Claims**

1. A combing cylinder assembly for use with a comber, said assembly comprising:

a combing cylinder adapted to be rotated in a combing direction, said cylinder having therein a plurality of axially extending grooves arranged in rows, each said groove having an outer portion opening onto the surface of said cylinder and a bottom portion, said groove extending outwardly from said bottom portion to said outer portion in a direction inclined forwardly toward said combing direction of rotation with respect to a radius of said cylinder;

a plurality of laminated needle plate assemblies, each said needle plate assembly comprising a plurality of needle plates joined together and fitted into a respective said groove;

each said needle plate including a needle insertion part to fit into a said groove and a needle base part to seat on the exterior of said cylinder, said needle base part having extending outwardly therefrom a needle head, said needle insertion part and said needle base part joining at an angle and together forming a substantially acute angle > shape with a concave recess formed in the corner therebetween; and

said plurality of needle plates of each said needle plate assembly being joined by insertion in said concave recesses of said plurality of needle plates a single elongated connecting and locking member, thereby forming a said laminated needle plate assembly.

4,284,091

HAIR CURLER

Willy Ehmann, Friedrichstrasse 8a, D-6900 Heidelberg, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 917,017

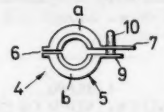
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748764

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **2 Claims**

1. A hair curler comprising a generally cylindrical elongate member having a generally helical rib extending therealong

and defining generally cylindrical depressions between the convolutions of the helical rib for receiving a tress of hair wound around the elongate member; a separate and generally annular clasp member adapted to be secured around the elongate member for retaining a free end of the tress of hair on one end of the elongate member, the clasp member comprising a ring composed of two semi-circular ring components, a hinge



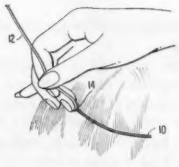
interconnecting the two ring components at one of their ends, and a catch for connecting the two ring components at the other end of their ends; and an L-shaped hook at an end of the elongate member opposite the one end thereof for retaining the elongate member on the tress of hair, the hook defining a narrow passage with the opposite end of the elongate member for introducing a tress of hair therethrough.

4,284,092

HAIRPIECE ATTACHING STRUCTURE AND METHOD

Frank Auretta, 55 Miller Rd., South Windsor, Conn. 06074

Filed Feb. 4, 1980, Ser. No. 118,187
Int. Cl.³ A41G *3/00*
U.S. Cl. 132—53 **9 Claims**



1. A hairpiece attachment device for attaching a hairpiece to the scalp of a person and comprising:

elongated coil spring means for gripping between the coils thereof the natural hair growing on a person's head to secure said spring means to the head; and

elongated flexible tubular means having a longitudinal slot extending from one end thereof to the other and adapted to fit over said coil spring means along the length thereof to provide a surface for securing a hairpiece.

4,284,093

CHANGE DISPENSING MACHINE

Takaaki Hayashi, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 13, 1979, Ser. No. 48,115
Claims priority, application Japan, Jun. 13, 1978, 53-70386
Int. Cl.³ G07D *1/02*
U.S. Cl. 133—4 A **8 Claims**

1. A change dispensing machine comprising:

a change dispensing board having change receiving inlets adapted to receive coins, said change dispensing board being reciprocated to dispense said coins received by said change receiving inlets;

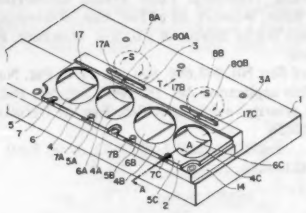
a plurality of slide boards provided under said change dispensing board, said slide boards holding said coins received by said change receiving inlet on top surfaces thereof;

connecting pin holes formed in said change dispensing board;

connecting pins engagable with said connecting pin holes such that said slide boards are selectively reciprocated with the reciprocation of said change dispensing board, whereby when connecting pins are disengaged from said connecting pin holes the reciprocation of said slide boards is released;

means adapted to move said connecting pins;

first elastic members for providing a restoring force to said connecting pins when said means to move are released from the reciprocation of said change dispensing board; and



second elastic members for providing a restoring force to said means to move whereby said slide boards are reciprocated with said change dispensing board,

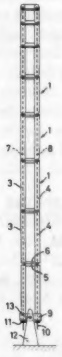
whereby said slide boards are engaged with said change dispensing board by said connecting pins when said coins are not dispensed, and said slide boards are disengaged from said change dispensing board by retraction of said connecting pins when said change coins are dispensed.

4,284,094

TENT STRUCTURE WITH SUPPORT ARCHES

Rudiger Behrend, Turnierstr. 2, D-7750 Konstanz, Fed. Rep. of Germany

PCT No. PCT/DE 78/00028 § 371 Date Jun. 26, 1979, § 102(e) Date Jun. 25, 1979, PCT Pub. No. WO79/00237, PCT Pub. Date May 3, 1979
This PCT application filed Oct. 24, 1978, Ser. No. 116,303
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747913
Int. Cl.³ E04B *1/32, 1/347, 1/344, 7/10*
U.S. Cl. 135—3 R **2 Claims**



1. Tent structure with support arches and a roof skin, wherein the support arches are constituted by a plurality of rigid arch elements which are tensioned together by means of a plurality of bracing wires drawn together respectively to the feet of each arch by their ends, said arch elements being joined articulately together at their butt ends, the axes of articulation defined by the butt ends extending perpendicularly to the plane

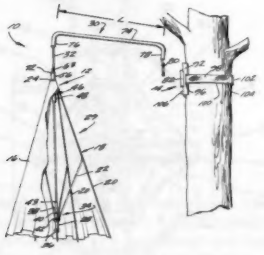
of the arch, said bracing wires passing along said arch elements juxtaposed with intervals extending substantially perpendicularly to the arch plane, and the arch elements each consisting of two tubes which are connected firmly together by distance pieces extending perpendicularly to the arch plane.

4,284,095

TOP-ERECTED UMBRELLA WITH CANTILEVERED SUPPORT

Don S. Norton, Clinton, Miss., assignor to Don Norton Manufacturing Co., Inc., Clinton, Miss.

Filed Jan. 17, 1980, Ser. No. 113,122
Int. Cl.³ A45B *11/00, 23/00*
U.S. Cl. 135—21 **14 Claims**



1. A top-erected umbrella with cantilevered support, comprising:

an umbrella canopy of flexible sheet material mounted to an umbrella frame having a plurality of ribs radiating from pivotal connection to a frame ring; the umbrella canopy having an apical opening in axial superimposed alignment with the frame ring; an anchor tube under said canopy in axial alignment with said frame ring; the umbrella frame further having a plurality of radiating stretchers, each having one end pivotally mounted to the anchor tube and another end pivotally mounted to a respective rib, so that moving the anchor tube axially towards the frame ring will cause the canopy to be raised to an erected condition from a collapsed condition;

an erector rope sub-unit comprising a rope having a first enlargement provided on a first, outer end thereof, anchor sleeve means threaded on said rope and disposed adjacent said first enlargement, said anchor sleeve means having an upper portion of reduced diameter, providing a guide finger having a shoulder at the base thereof; a tubular clamp strung on said rope above said anchor sleeve and having a lower tubular portion and an upper tubular portion, each portion having a clamping jaw, the two clamping jaws being in axially confronting relation; means for securing the two clamp portions together so that the two clamping jaws are in clamping relation; means providing a second enlargement on the second inner end of said rope, said lower tubular portion of said tubular clamp having downwardly opening throughbore means arranged to slidingly telescopingly receive said guide finger of said anchor sleeve; and an enlarged bead fixed on said rope at a predetermined distance therealong which is further toward said second end than is said tubular clamp;

a bracket tube having an open longitudinal bore and having a notch in the lower end thereof; and means for securely mounting said bracket tube in a generally upright, elevated condition;

a swing tube having a substantial lateral extent and two opposite, generally downwardly directed ends comprising an inner end an an outer end;

said rope being threaded through said umbrella frame and swing tube, so that said first end lies adjacent said anchor tube of said frame and said second end lies accessable below the inner end of the swing tub; means securing the anchor tube to the anchor sleeve means; the clamp being assembled through said canopy apical opening and said frame ring so that said canopy and frame are clamped between said clamp jaws and so that an upstanding peg portion of said clamp rises from the top of said canopy;

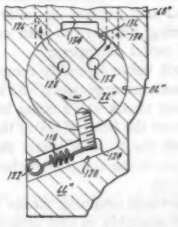
for erecting and mounting the umbrella, the outer end of the swing tube being telescoped with said upstanding peg, the inner end of the swing tube being telescoped with the bracket tube so that the inner end of the rope lies exposed below the bracket tube, and the inner end of the rope being pulled down until said bead has emerged downwards through the bracket tube, whereupon the inner end of the rope has been pulled laterally to pull the rope just above the bead into said notch in the lower end of the guide tube.

4,284,096

AUTOMATIC TRANSMISSION GOVERNOR HAVING DECELERATION SENSITIVE PRESSURE SWITCHING FEATURE

Allan S. Leonard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 4, 1980, Ser. No. 156,237
Int. Cl.³ G05D *13/66*
U.S. Cl. 137—48 **3 Claims**



1. In a governor valve assembly for an automatic transmission in an automotive vehicle driveline having an internal combustion engine:

a driven shaft forming a torque output member for said transmission;

a governor body connected to and rotatable with said driven shaft, said body having an opening through which said shaft extends, said body being rotatable relative to said driven shaft, stop means for limiting relative angular displacement of said body and said driven shaft;

spring means for biasing said body to a first position relative to said driven shaft as determined by said stop means, said body being angularly adjustable to a second position relative to said driven shaft in response to deceleration inertia forces acting on said body as said driven shaft is decelerated;

a governor pressure port and a vent port in said body communicating with said opening at angularly spaced locations, and a governor pressure passage rotatable with said driven shaft and registering with said governor pressure port when said body and said driven shaft assumes said first relative position;

said body being angularly adjustable to a second position relative to said driven shaft whereby said governor pressure passage is brought into communication with said vent port and said governor pressure port is blocked.

4,284,097

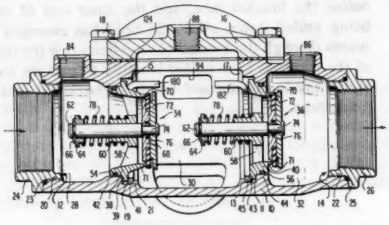
IN LINE BACK FLOW PREVENTER

Bernard B. Becker, Belmont; John K. Bowman, Brighton, and Cyril A. Randall, Belmont, all of Mass., assignors to Amtrol Inc., West Warwick, R.I.

Continuation-in-part of Ser. No. 890,964, Mar. 28, 1978, Pat. No. 4,232,704. This application Jul. 18, 1979, Ser. No. 58,566

Int. Cl.³ F16K *15/06, 45/00*

U.S. Cl. 137—218 **12 Claims**



1. A device for preventing the back flow of water from a point of use into a water supply line comprising:

(a) a unitary casing having a water inlet opening, a water outlet opening and a drain vent opening, said water inlet and water outlet openings being coaxially aligned, the interior of said casing defining an inlet chamber, a central chamber and an outlet chamber, said chambers being coaxially aligned with each other and with said water inlet and water outlet openings to form a straight through flow path for the water, said interior of said casing also defining a drain vent chamber communicating with said drain vent opening and said central chamber, and said drain vent chamber being offset from said coaxially aligned inlet, central and outlet chambers;

(b) a first check valve assembly removably attached to the interior of said casing between said inlet and central chambers, said first check valve being biased in a closed position to prevent the flow of water therethrough and opening to permit the flow of water therethrough when the water pressure in the water inlet chamber exceeds a predetermined level;

(c) a first removable retaining means for retaining said first check valve assembly in said attached position, said first removable retaining means being located in said central chamber;

(d) a second check valve assembly removably attached to the interior of said casing between said central and outlet chambers, said second check valve being biased in a closed position to prevent flow of water therethrough and opening to permit the flow of water therethrough when the water pressure in said central chamber exceeds a predetermined level;

(e) a second removable retaining means for retaining said second check valve assembly in said attached position, said second removable retaining means being located in said central chamber;

(f) a relief valve located within said casing interposed between said central chamber and said drain vent chamber, said relief valve being offset from said coaxially aligned inlet, central and outlet chambers, and said relief valve being biased in an open position;

(g) a flexible diaphragm attached to said casing and to said relief valve, one side of said diaphragm communicating with said central chamber and the other side of said diaphragm communicating with said inlet chamber, such that the normal pressure differential between said inlet and central chamber causes said relief valve to close thereby preventing water flowing from said central chamber to said drain vent chamber; and

(h) a cover removably attached to said casing over an opening therein such that upon removal of said cover, said first and second check valve assemblies being removable from said casing interior without removal of said flexible diaphragm.

4,284,098

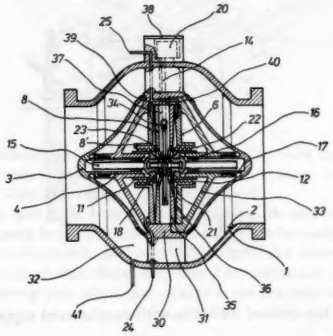
VALVES FOR CONTROLLING OR PREVENTING FLUID FLOW

Julius Kruschik, Gumpoldskirchen, Austria, assignor to Klinger AG, Zug, Switzerland

Filed Feb. 6, 1979, Ser. No. 9,838

Int. Cl.³ F16K *31/128*

U.S. Cl. 137—219 **16 Claims**



9. In a valve for control of fluid flow having a shut-off element axially movable to close against a valve seat, drive means to cause axial movement of said shut-off element, and a diaphragm operatively connected to said shut-off element so as to apply axial force to said shut-off element in the closing direction in response to fluid pressure, the improvement comprising arranging the diaphragm to control the axial position of a connecting member forming part of said drive means, the shut-off element being axially movable relative to said connecting member by the drive means, control fluid being admissible to volumes on both sides of diaphragm.

4,284,099

FROST-PROOF FIRE HYDRANT

Sultan A. Rifat, 159 Gelston Ave., Brooklyn, N.Y. 11209

Filed Apr. 30, 1979, Ser. No. 34,344

Int. Cl.³ E03B *9/02;* **F16K** *35/02*

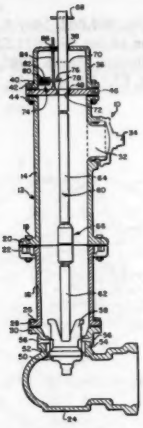
U.S. Cl. 137—296 **4 Claims**

1. In a fire hydrant including a vertical barrel defining a passage adapted for connection to a shoe; a bonnet having a thru aperture secured to the upper end of the barrel; a valve stem disposed in said barrel for reciprocating movement in said passage with one end of said stem extending through said aperture; valve means connected to the other end of said stem for reciprocating movement therewith between an open position wherein said shoe communicates with said passage and a closed position wherein communication between said shoe and said passage is blocked, said valve means being arranged for movement to said open position against the fluid pressure in said shoe upon downward movement of said stem; and operating means secured to said bonnet and engageable with said one end of said stem for moving said stem and attached valve means to said open position, the improvement which comprises:

a pin moveably secured in said bonnet;

said stem having a hole for receiving said pin, said pin being moveable between a first position wherein said pin is in

said hole when said valve is in said closed position and a second position wherein said pin is out of said hole;



a lever secured to said pin and having one end extending through an additional aperture in said bonnet for moving said pin between said first and second positions; and

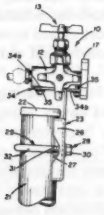
means for biasing said pin to said first position.

4,284,100

PIPE MOUNT MANIFOLD ASSEMBLY

John N. Scapes, Schaumburg, and Joseph S. Soos, Hanover Park, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 4, 1979, Ser. No. 45,193
Int. Cl.³ F16L *3/00*; F16K *1/00*
U.S. Cl. 137—343 **3 Claims**



1. A pipe mount manifold assembly (**10**) comprising:

a valved manifold (**11**) having means (**17**) for mounting a transmitter (**16**) for process instrumentation thereto, and means (**18**) for connecting a fluid flow conduit (**14,15**) thereto;

a mounting bracket (**23**) for supporting the manifold having a carrier portion (**34**) provided with securing means (**35,35*a*,35*b***) for supporting the manifold in any one of a plurality of different positions thereon, a pipe mount portion having a flat plate portion (**24**), a first pair of turned flanges (**25**) formed at opposed sides of said plate portion and defining a first pair of chocks for mounting the bracket to a pipe with the carrier portion directed transversely to the spacing direction thereof, and a second pair of turned flanges (**26**) formed at opposed sides of said plate portion and defining a second pair of spaced chocks for mounting the bracket to a pipe with the carrier portion directed parallel to the spacing direction thereof, said pipe mount portion further having a plurality of openings in said flat plate portion within the area thereof defined by said flanges and including a first pair of openings (**33*b***) spaced perpendicularly to the spacing direction of said first pair of flanges (**25**) and a second pair of openings (**33*a***) spaced perpendicularly to the spacing direction of said second pair of flanges (**26**), said flanges (**25,26**) each further defining a cleat portion (**27**) for frictionally engaging a pipe to distribute the force of mounting said pipe mount portion to a pipe along at least two separated areas of said pipe mount portion and to positively position said mounting bracket in the desired mounting position with respect to a pipe;

a U-clamp (**29**) adapted to embrace a pipe and having legs (**32**) provided with distal ends (**31**) disposed to pass selectively through either of said pairs of openings; and

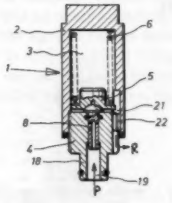
securing means (**30**) adapted to be secured to said distal ends for cooperation with the U-clamp in clamping the bracket to the pipe with said carrier portion directed selectively parallel to or transversely to the pipe, whereby said manifold may be pipe mounted in any one of at least eight different positions.

4,284,101

PRESSURE-RELIEF VALVE DEVICES

Walter Weirich, Dortmund, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 974,092
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803283
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—538 **10 Claims**



1. A valve device for pressure relief of hydraulic pressure fluid and especially for pressure relief of hydraulic props of mine equipment operated with an oil-water emulsion as pressure fluid at a pressure in the range of 200–600 bars, said device comprising:

a main housing defining an internal chamber closed at one end;

a guide located in the main housing, said guide having an end face at the opposite end of said chamber and a first axial bore;

a valve member having a head with an annular stop face opposed to said end face and a stem received in said first axial bore, a second axial bore in said stem which communicates via radial borings in said stem with pressure fluid outlets in the external peripheral surface of said stem, said peripheral surface having a smoothness with a maximum peak-to-valley depth of about 1 μm and being slidable within said bore,

a groove in the wall of said first bore, said groove having a maximum diameter which is less than the outer diameter of said stop face,

a sealing ring located in said groove to engage with its internal diameter in sealing relationship with said peripheral stem surface, the sealing ring having its internal diameter slightly smaller than the diameter of said peripheral stem surface, the axial distance between said groove and said end face being not greater than the cord diameter of said sealing ring,

a spring located in said chamber to apply force to said valve member to urge said stop face against said end face and to

displace said stem to a position at which communication between said pressure fluid outlets and said chamber is blocked by said sealing ring,

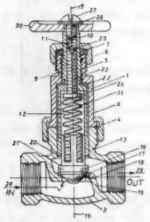
a main inlet for pressure fluid communicating with said first and second axial bores, a main outlet for pressure fluid leading from said chamber, whereby said valve member can be displaced by excess fluid pressure against the force of said spring to axially displace said stem to a position at which said fluid outlets are between said sealing ring and said chamber, thereby permitting pressure fluid to discharge via said second axial bore, said radial borings and said pressure fluid outlets into said chamber, and from said chamber through said main outlet.

4,284,102

COMBINATION STOP AND PRESSURE REDUCING VALVE

Hans Adler, New York, N.Y., assignor to H. Adler Associates, Inc., New York, N.Y.

Filed Jun. 28, 1978, Ser. No. 920,014
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—543.21 **1 Claim**



1. A combination shut-off and adjustable pressure-reducing valve, comprising:

a. a valve body, said valve body incorporating a seat between an inlet and an outlet,

b. a valve bonnet, said valve bonnet being at least partially hollow and joined with said valve body,

c. a valve stem, said valve stem being at least partially hollow, engaged with said valve bonnet for axial movement with respect thereto and having a piston-engaging surface,

d. an adjusting screw, said adjusting screw being located at least partially in said valve stem for axial movement with respect thereto,

e. a piston, said piston being located for movement axial of said valve stem, as limited by contact with the piston-engaging surface of said valve stem, and

f. a spring, said spring being located to provide spring bias between said adjusting screw and said piston, said adjusting screw adjusting the amount of spring bias,

g. whereby said spring biases said piston into closing engagement with said valve body seat and

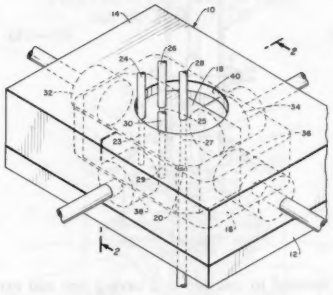
h. said piston, to the extent limited by contact with the piston-engaging surface of said valve stem, being openable by a pressure differential, between inlet and outlet pressures, greater than said spring bias.

4,284,103

RANDOM ACCESS VALVE

J. C. Pemberton, 10222 San Diego Mission Rd., San Diego, Calif. 92120

Continuation of Ser. No. 904,042, May 8, 1978, abandoned, which is a continuation of Ser. No. 671,522, Mar. 29, 1976, abandoned. This application May 6, 1980, Ser. No. 147,010
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—625 **18 Claims**



1. A valve comprising:

housing means having a cavity therein,

a slideable valve member having a flat surface,

means for mounting said valve member in said cavity for translation without rotation along a plurality of intersecting axes, fixed with respect to said valve member and lying in the plane of said surface, and comprising a first plate member having a flat surface contiguous to and across which said valve member surface slides,

first conduit means communicating with the exterior of said housing means and including first port means in one of said surfaces,

second conduit means communicating with the exterior of said housing means and including second port means in the other of said surfaces selectively registrable with certain of said first port means upon predetermined translation without rotation of said valve member along said axes,

first translating means for translating without rotation said valve member in said cavity along one of said axes for effecting registration between certain of said first port means and certain of said second port means;

second translating means for translating without rotation said valve member in said cavity along another of said axes for effecting registration between certain of said first port means and certain of said second port means.

4,284,104

SAFETY VALVE FOR PACKAGES

Pierre-Gino Beghini, 42, rue d'Avron, Paris, France (75020)

Filed Oct. 26, 1979, Ser. No. 88,380
Claims priority, application France, Nov. 9, 1978, 78 31744
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—859 **10 Claims**

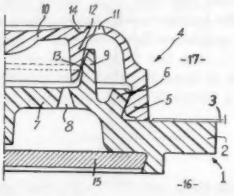
1. A safety valve for the wall of a container, said valve comprising:

a first member having a main body portion adapted to be affixed to the wall of the container, said main body portion having first opening means therethrough, and said first member including an upstanding annular surface extending away from said main body portion;

a second member for connection to said first member, said second member having a main body portion sized to overlie and enclose said upstanding annular surface and said first opening means, said main body portion of said second

member having second opening means therethrough, and said second member including an annular sleeve extending away from the surface of said main body portion of said second member;

one of said first and second opening means being positioned inside of its respective annular surface or annular sleeve, and the other of said first and second opening means being positioned outside of its respective annular surface or annular sleeve; and



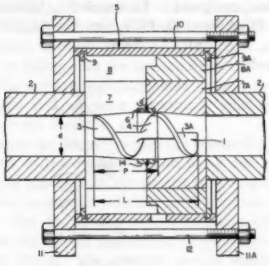
said annular sleeve being sized so as to cooperate with said annular surface on said first member to seal said first opening means from said second opening means when the pressure differential across the wall of the container is below a predetermined differential limit, and said second member and said annular sleeve being sufficiently flexible so that said annular sleeve moves away from said annular surface when the pressure differential across the wall of the container exceeds said predetermined differential limit to permit said first opening means to communicate with said second opening means.

4,284,105

DISCRETE SPIRAL FLOW IMPARTING DEVICE

Isaac Moked, New Brunswick; Richard H. Handwerk, South Somerville, both of N.J., and Hans J. Goettler, Fargo, N. Dak., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 93,016
Int. Cl.³ F15D *1/02*
U.S. Cl. 138—42 **6 Claims**



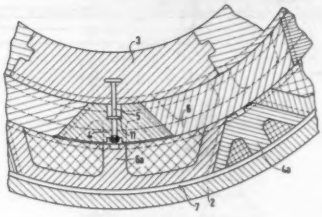
2. Apparatus for imparting spiral motion to material flowing in a tube comprising a relatively short spiral member anchored within a modular member capable of attachment to said tube to preserve movement relative to said tube, said spiral member having a maximum length shorter than said tube and being capable of imparting predetermined spiral motion to material flowing in said tube, said spiral member having two ends and a central portion, wherein said central portion has a diameter exceeding that of said ends, and said apparatus further comprising a hollow housing snugly fitting over said spiral member.

4,284,106

PIPE OR VESSEL WITH INTERNAL LINING

Karl-Heinz Haas, Lauf, and Werner Lang, Calw-Stammheim, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,120
Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820174
Int. Cl.³ F16L *9/14*; F27D *3/02*
U.S. Cl. 138—147 **2 Claims**



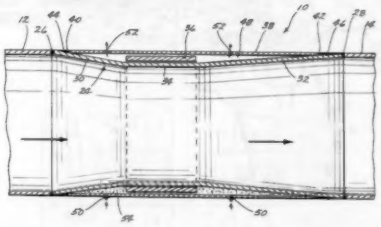
1. A hollow cylindrical body such as a tube or vessel for receiving hot gas comprising an inner lining formed of an inner cylindrical wall and wedge-shaped molded blocks with radially outwardly partly narrowing and partly widening cross sections disposed at the outer circumference thereof, metallic anchoring means for fastening part of said molded blocks to said inner wall, the remainder of said molded blocks being disposed between the fastened blocks without any binding intermediate layers, and an outer cylindrical wall surrounding said molded blocks, the molded blocks fastened by said metallic anchoring means to said inner wall being keystones having a radially inwardly narrowing cross section and binding the remainder of the molded blocks against the inner cylindrical wall.

4,284,107

FRACTURE ARRESTOR FOR A PIPELINE

Ronald D. Grose, Omaha, Nebr., assignor to Internorth, Omaha, Nebr.

Filed Apr. 25, 1980, Ser. No. 143,646
Int. Cl.³ F16L *9/14, 35/00*
U.S. Cl. 138—172 **12 Claims**

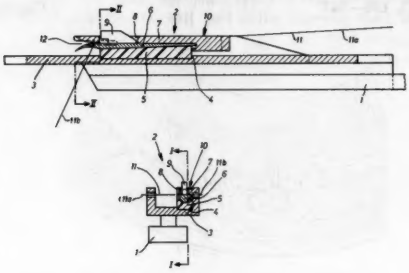


1. A crack arrestor assembly for insertion in at least one intermediate point in a pipeline formed of a plurality of sections of pipe to prevent the propagation of pipeline fractures, said crack arrestor assembly including a body portion having opposite ends which are in open communication with sections of said pipeline at both ends of said crack arrestor, said body portion including a wall which is sloped inwardly from each end thereof to an intermediate point thereby forming a reduced diameter portion at the outer surface of said body portion, and a reinforcing means embracing said reduced diameter portion.

4,284,108
THREAD GRIPPER

Allan W. H. Porter, Lustmühle, and Anton Lücian, Arbon, both of Switzerland, assignors to Adolph Saurer Limited, Arbon, Switzerland

Filed Nov. 13, 1979, Ser. No. 93,450
Int. Cl.[3] D03D 47/22
U.S. Cl. 139—448 4 Claims

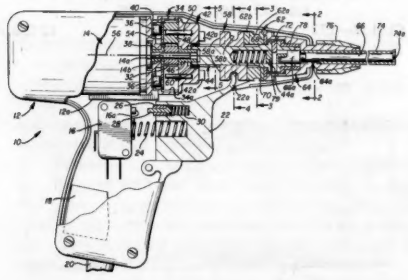


1. A thread gripper for textile threads comprising:
a pair of horns (3, 7), one of said horns (7) being held rigid;
a cushion (5) of soft resilient material carried by said other horn (3);
said cushion being of rubber or rubber-like plastic material;
a movable tongue (6) carried on said cushion (5) and being prestressed by said cushion against an inside of said rigid horn (7);
whereby a thread positioned between said movable tongue (6) and said inside of said rigid horn (7) is securely held.

4,284,109
ELECTRIC CONDUCTOR WRAPPING TOOL

Paul R. Kilmer, Leroy, and Roger M. Bula, Reed City, both of Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 19, 1979, Ser. No. 86,425
Int. Cl.[3] B21F 15/04
U.S. Cl. 140—122 16 Claims

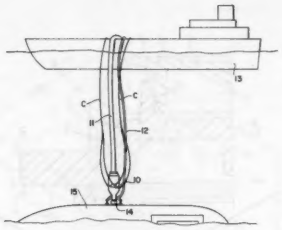


1. In a conductor wrapping tool of the type having drive means selectively engageable with clutch means mounted on a drive shaft for effecting rotation of a bit connected to the drive shaft, and having index means for stopping the bit in a predetermined position after disengagement of the drive means and clutch means, the improvement which comprises:
at least one separate resilient member means frictionally engaged between the drive means and drive shaft for applying controlled torque such that the index position is achieved and the drive means is gradually arrested after disengagement from the clutch means and stoppage of the drive shaft.

4,284,110
APPARATUS FOR TRANSFER OF FLUENT MATERIALS FROM ONE CONTAINER TO ANOTHER

Carl D. Divelbiss, Roslyn, Wash., and Mortimer R. Dock, Arlington, Va., assignors to Frances K. Divelbiss, Roslyn, Wash.

Continuation-in-part of Ser. No. 806,908, Jun. 15, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,743
Int. Cl.[3] B65B 3/04; B63C 7/16
U.S. Cl. 141—98 12 Claims

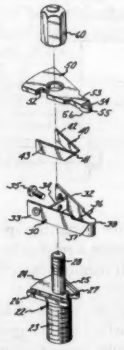


1. An apparatus detachably securable upon the surface of a container for the transfer of the fluid or aeriform contents thereof to a receiving vessel, said apparatus comprising a housing having upon the exterior thereof at least two projecting legs having magnetic feet for initial engagement of said apparatus with said container; and disposed within said housing a motor connected by power lines and hose means extending between said apparatus and said receiving vessel, and integrally connected to said motor a power shaft and a power ram; locking dogs hingedly connected to said power ram for the detachable securement of said apparatus to said container; a pilot drill centrally disposed within a circular saw integrally connected to said power ram, said saw projecting beyond the end of said housing most distant from said motor and being adapted to cut an orifice in the wall of said container; and sealing gasket and ring means for preventing the escape of the contents of said container; said entire apparatus being retrievable after removal of said contents from said container by release of the locking action of said dogs.

4,284,111
WOOD LATHE TOOL

Paul S. Petersen, Minnetonka, and Robert A. Holdahl, Hopkins, both of Minn., assignors to Toolmark Co., Minneapolis, Minn.

Filed Nov. 20, 1979, Ser. No. 96,220
Int. Cl.[3] B23B 29/06
U.S. Cl. 142—56 7 Claims



1. A wood cutting tool assembly comprising a blade member formed of a thin bar of material bent into a generally U shape

and having a rounded end wall and side legs extending from said rounded end wall to define a space between the legs, said legs and rounded end wall having upper and lower edges, the upper edge of said rounded end wall being sharpened to form an upwardly facing cutting edge, means to support said blade comprising a base engaging the lower edge of said legs, a guard plate engaging the upper edge of said legs, means to exert a clamping force on said base and guard plate to clamp and support the legs during use, said guard plate overlying said blade and having a nose portion closely overlying the rounded end wall adjacent said cutting edge to limit the amount of space between said guard plate and said cutting edge and thereby limit the depth of cut of said cutting edge, and a chip deflector including a deflector wall extending between said legs and spaced from the rounded end wall to define a chip channel, said deflector wall being inclined in direction away from the rounded end wall and in direction away from the cutting edge.

4,284,112

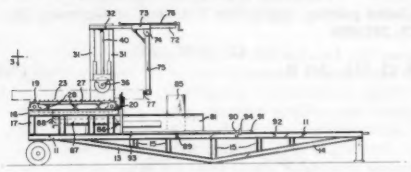
AUTOMATIC WOOD CUTTING AND SPLITTING MACHINE

Charles E. Hoskin, 8824 20th N.E., Seattle, Wash. 98115

Filed Dec. 14, 1977, Ser. No. 860,390

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—3 K **10 Claims**



1. An automated apparatus for cutting and splitting timber and conveying the split timber to a storage or use location comprising:

intermittent conveyor means for supporting and intermittently advancing the timber to be cut a predetermined measured length beyond the cutting station,

cutting means at the cutting station for cutting the timber advanced to the cutting station,

a trough beneath the cutting station for receiving the cut timber,

a vertical splitting blade positioned in the path of the timber in the trough downstream from the cutting means,

a reciprocating hydraulic ram which engages and forces the cut timber falling into the trough from the cutting station against the vertical splitting blade to split the timber into two pieces and advance previously split timber to the storage or use location, and

control means for automatically (1) controlling advance of the timber to the cutting station to be cut, (2) activating the cutting means with the timber in the cutting station to cut the timber and (3) activating the reciprocating hydraulic ram after the timber is cut to force the cut timber resting in the trough against the vertical splitting blade to split the timber, the control means including sensing means mounted adjacent the cutting means for sensing the predetermined measured length of the timber being conveyed into and past the cutting station by the conveyor means, means responsive to the sensing means operatively connected to the conveyor means and cutting means to stop the conveyor means and activate the cutting means at the cutting station to cut the timber, means cooperating with said cutting means for sensing the completion of said cut and means responsive to said last mentioned sensing means for activating the reciprocating hydraulic ram to split the cut timber.

4,284,113

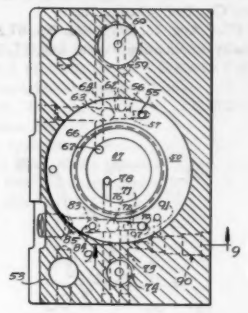
HYDRAULIC LOG SPLITTER

William F. Nordlin, Coloma, Mich., assignor to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Dec. 20, 1979, Ser. No. 105,612

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 A **7 Claims**



1. A manually operated log splitter, comprising a bi-ended main beam, a splitter wedge fixed at one end of the main beam, and manually operated hydraulic power means fixed to the other end of the main beam and having a ram reciprocably movable at least partly out of and away from a pressurizable ram chamber toward the splitter wedge for urging logs against the wedge to split them, the manually operated power means further comprising a plurality of independent manually operated reciprocating pumps for urging the ram toward the wedge, automatically operable relief valve means and fluid conduit means providing a fluid passage between one of the manually operated pumps and a reservoir but functionally independent of the other pump for relieving pressure from that pump only to the reservoir, and manually operable relief valve means separate from the automatically operable relief valve means and in fluid communication with the ram chamber and reservoir.

4,284,114

LOCKING MEMBER FOR A CLAMPING BOLT

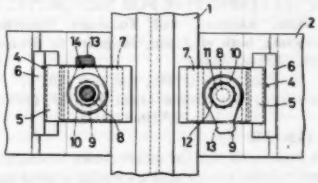
Toshihiko Korenobu, 15-5, Kida-cho, Neyagawa-shi, Osaka-fu, Japan

Filed Apr. 12, 1979, Ser. No. 29,485

Claims priority, application Japan, May 15, 1978, 53/066936[U]

Int. Cl.³ B60O *35/02*; F16B *39/10*

U.S. Cl. 411—119 **5 Claims**



1. A locking means for use with a clamping bolt or nut and fastener means associated therewith for preventing the clamping bolt from loosening, said locking means comprising:

a generally flat body having a hole therethrough, the walls of said body defining said hole having a shape wherein said hole has a dodecagonal shape for receiving the head of the clamping nut or bolt; and

an engagement leg portion extending downwardly from one

end of said body, said engagement leg portion having at least one horizontally extending groove on its inner surface.

4,284,115

TIRE TREAD

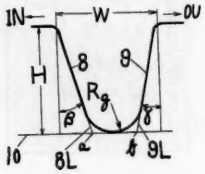
Shumio Ohnishi, Takatsuki, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Aug. 16, 1979, Ser. No. 67,235

Claims priority, application Japan, Aug. 17, 1978, 53-100539; Aug. 17, 1978, 53-100540

Int. Cl.³ B60C *11/00*

U.S. Cl. 152—209 R **6 Claims**



2. A pneumatic bias tire for relatively high speed and heavy duty vehicles; comprising: a rib type tread pattern having a plurality of circumferentially extending grooves with a slant angle β of the groove wall face positioned toward the tire center line portion being within a range of 5° to 45° and being related to the slant angle γ of the groove wall face positioned toward the shoulder line portion of the tire according to the relationships:

$\beta > \gamma$,

$\beta - \gamma = 1°$ to 16°,

and $\beta/\gamma = 1.10$ to 2.00.

6. A pneumatic bias tire for relatively high speed and heavy duty vehicles, comprising: a rib type tread pattern having a plurality of circumferentially extending grooves having a constant depth and width in the circumferential direction, the slant angle β of the groove wall face positioned toward the center line portion of the tire being within a range of 5° to 45° and being related to the slant angle γ of the groove wall positioned toward the shoulder line portion of the tire in the relationship $\beta = \gamma$, and the radius R_1 of the curvature between the groove bottom and the groove wall toward the center line portion and the radius R_2 of the curvature between the groove bottom and the groove wall toward the shoulder line portion is $R_1 > R_2$ and R_1/R_2 is in the range of 1.10 to 2.00.

4,284,116

PNEUMATIC TIRE FOR MOTORCYCLES

Takeshi Sato, Akigawa, and Yoshinari Matsubara, Higashimurayama, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

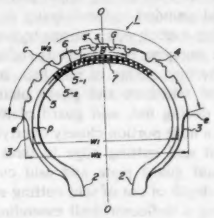
Filed Feb. 5, 1980, Ser. No. 118,717

Claims priority, application Japan, Feb. 19, 1979, 54-17168

Int. Cl.³ B60C *9/18*

U.S. Cl. 152—360 **6 Claims**

1. In a pneumatic tire for motorcycles having an excellent high speed stability comprising a torodial-shaped carcass composed of a pair of plies each formed of textile cords covered with coating rubber and extending from one of a pair of annular bead portions to the other bead portion, a tread portion superimposed about a crown portion of said carcass and extending along the outer contour of said crown portion to such an extent that the tread has a width larger than a maximum width between sidewalls of the tires, and a lenticular stress relieving rubber layer interposed between said plies of said carcass symmetrically with respect to the equatorial plane of the tire, the improvement comprising, said stress relieving rubber layer having a width of 15% to 35% of a tread width



measured along the outer contour of said tread portion, and a modulus of 16 kg/cm² to 30 kg/cm² at 100% elongation.

4,284,117

STEEL BELTED RADIAL PLY TIRES WITH CAP PLIES EMPLOYING SINGLE YARN REINFORCING ELEMENTS

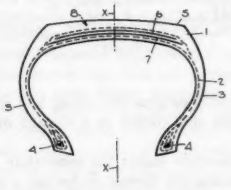
Dionysius J. Poque, Meischenfeld 17, Aachen-Kornelimuenster, and Horst Lorenz, Peitschenweg 29, 5190 Stolberg-Buesbach, both of Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,398

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2853006

Int. Cl.³ B60C *9/20*

U.S. Cl. 152—361 R **11 Claims**



1. A pneumatic tire comprising a radial ply carcass, a tread overlaying the crown region of said carcass, a belt interposed between said tread and said crown region of said carcass in circumferential surrounding relation to the latter, said belt including at least two plies of belt cords of high modulus material, the belt cords in each ply extending parallel to one another and being in crossing relation with respect to the cord of the next adjacent belt ply, a cap ply interposed between the radially outwardmost one of said belt plies and said tread, said cap ply consisting of a strip of material having non-metallic reinforcing elements parallel to one another and to the median plane of the tire, said reinforcing elements consisting of a series of single yarns only, having a twist of approximately 100 to 400 turns per meter and having a packing density of said single yarns in said cap ply between 60 to 300 yarns per decimeter and being longitudinally prestressed for exerting compressive stress on said belt plies.

4,284,118

FOLDING-DOOR COMPRISED OF WOODEN SLATS AND HINGES

Sergio Ceron, Via Pompeo Cambiasi, 14/1 Milan, Italy

Filed Aug. 14, 1979, Ser. No. 66,762

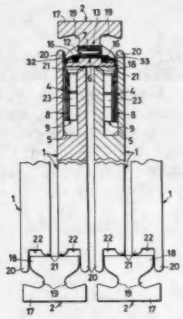
Claims priority, application Italy, Sep. 6, 1978, 27350 A/78; Jun. 14, 1979, 21842 B/79

Int. Cl.³ E06B *3/94, 9/00*; E05D *1/06*

U.S. Cl. 160—229 R **5 Claims**

1. A folding door of the type wherein an array of wooden slats are hingedly connected together at adjacent vertical

edges, comprising vertical wooden hinge strips each having a horizontal cross-sectional shape substantially in the form of a double mushroom with a central stem and oppositely disposed heads of different widths separated by side recesses, at least two longitudinally spaced apertures through said stem, said adjacent vertical edges of said slats having a horizontal cross-sectional shape in the form a U with legs of different lengths to thereby form a longitudinal slot in each said vertical edge, hinges for connecting said slats together each having a central part and oppositely disposed side parts hingedly connected to said central part, said central part being disposed and latched



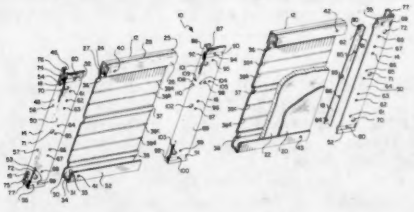
within one of said apertures in said strip, and said side parts being inserted and latched in said adjacent vertical edges of said slats, said strips, slats and hinges being assembled together so that when the door is in the unfolded position, the longer legs of said slat edges are received in the adjacent side recesses of said strip and the shorter legs of said slat edges each lie closely adjacent the narrower head of said mushroom shaped strip so as to appear to be a continuation thereof, and when the door is in the folded position, said longer legs are disposed alongside the adjacent said narrower head to substantially conceal said side recesses, said slates rotating substantially about the vertical side edges of said narrower head.

4,284,119

OVERHEAD DOOR AND OVERHEAD DOOR SECTION SYSTEM AND METHOD

David O. Martin, Salt Lake City, and Lawrence G. Martin, Bountiful, both of Utah, assignors to Martin Overhead Door and Electronics Co., Salt Lake City, Utah

Filed Jul. 23, 1979, Ser. No. 59,880
Int. Cl.³ E04C *2/08*; E06B *3/12*
U.S. Cl. 160—232 **19 Claims**



1. An overhead door section comprising:

a substantially rectangular sheet of metal formed into a section facing, the section facing having the longitudinal edges shaped into stile-receiving first and second channels and with longitudinal ribs formed between the channels;

end stiles for securement to the section facing in the stile-receiving channels, the end stiles being fabricated from sheet metal into a modified C configuration including a front face, a side wall, and a rear face, the front face being placed into juxtaposition with the outside face of the section facing with the end of the section facing engaged inside the end stile; and

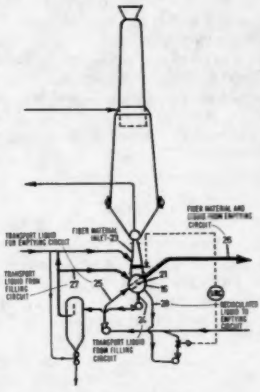
an angle support received inside the end stile in juxtaposition with the ribs of the section facing and secured to the ribs and to the side wall of the end stile.

4,284,120

METHOD AND DEVICE FOR TRANSFER OF FIBER MATERIALS TRANSPORTABLE BY LIQUIDS

Stig Glöersen, Edsgatan, POB 4502, Karlstad, Sweden

Continuation of Ser. No. 830,206, Sep. 2, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,459
Claims priority, application Sweden, Sep. 3, 1976, 7609782
The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.
Int. Cl.³ D21C *7/06, 7/14*
U.S. Cl. 162—19 **8 Claims**



1. A continuous process for transferring a fiber material via a liquid carrier transporting liquid between different treatment steps which comprises:

(a) providing a valve mechanism comprising a housing and rotor having at any one time three flow-through circuits for transporting said fiber material, each circuit consisting essentially of an interconnected inlet, outlet and pocket for transporting said fiber containing carrier liquid, said pocket being a part of said rotor;

(b) introducing from a first treatment step a transporting carrier liquid containing fiber material through an inlet into a pocket while displacing a portion of the carrier liquid through an outlet completing a first or filling circuit, leaving the fiber along with the remaining portion of the carrier liquid in said pocket;

(c) rotating said pocket into a second position and emptying the fiber containing carrier liquid in the pocket into a following treatment step by displacing the fiber and carrier liquid through an outlet from the pocket by a transporting liquid introduced through an inlet into the pocket completing a second or emptying circuit;

(d) once again rotating said pocket into a third position and displacing at least a portion of the transport liquid contents of the pocket through an outlet, said transport liquid being recirculated and reintroduced at the inlet of said second or emptying circuit by the carrier liquid displaced from said first circuit and introduced through an inlet into said pocket in said third position, to complete a third circuit; and

(e) continuously repeating steps b through d such that said pocket is always filled with a transport or carrier liquid.

8. A device for continuously transferring a fiber material

containing liquid carrier between different treatment steps which comprises a combination:

a valve mechanism comprising a housing and rotor forming at any one time three through circuits for transporting said fiber material, each circuit consisting essentially of an interconnected inlet and outlet of said housing with a pocket in said rotor,

means for introducing from a first treatment step a transporting carrier liquid containing fiber material through a first inlet into a pocket while displacing a portion of the carrier liquid through a first outlet completing a first or filling circuit, leaving the fiber along with the remaining portion of the carrier liquid in said pocket,

means for emptying the fiber containing carrier liquid from the pocket into a following treatment step by displacing the fiber and carrier liquid through an outlet from the pocket by a transporting liquid introduced through an inlet into the pocket thereby completing a second or emptying circuit,

means for displacing at least a portion of the transport liquid contents of the pocket through an outlet, said transport liquid being recirculated and reintroduced at the inlet of said second or emptying circuit by the carrier liquid displaced from said first circuit and introduced through an inlet into said pocket thereby completing a third circuit, and

means for continuously rotating the rotor component of said valve mechanism.

4,284,121
PROCESS AND MATERIALS FOR MAKING REFRACTORY CORES

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

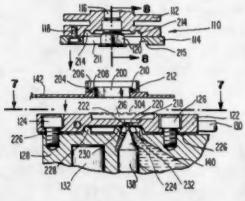
Filed Feb. 28, 1980, Ser. No. 125,468
Int. Cl.³ B22C *1/02*
U.S. Cl. 164—520 **6 Claims**

1. In a process of making molded refractory articles from a mixture containing comminuted refractory material and a sublimable binder that is sublimated after molding to provide a porous structure, the improvement characterized by the steps of compounding said mixture to include partially dehydrated gypsum as part of the refractory material, soaking the molded article in water after the sublimable binder has been sublimated, and allowing the water in the pores of the molded article to hydrate the gypsum and cause it to set.

4,284,122
METHOD AND APPARATUS FOR CASTING LEAD INTO PLASTIC FOR SIDE TERMINAL BATTERIES

Terry Oxenreider, Wernersville; Donald A. Duesterhoeft, Robesonia, and Edgar M. Erb, Lancaster, all of Pa., assignors to General Battery Corporation, Reading, Pa.

Division of Ser. No. 753,835, Dec. 23, 1976, Pat. No. 4,158,382.
This application Apr. 6, 1979, Ser. No. 27,656
Int. Cl.³ B22D *19/00, 17/04*
U.S. Cl. 164—98 **24 Claims**



1. A method for casting a lead-alloy battery terminal connector through an aperture in a plastic battery case, comprising the steps of:

(a) providing a plastic battery case having an aperture in a wall of said case;

(b) positioning a plurality of mold means to surround said aperture on either side of said wall to form a die mold and to define a mold cavity;

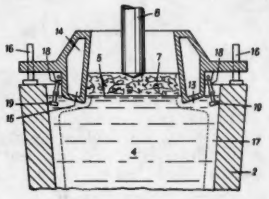
(c) injecting molten lead under pressure into said mold cavity through an opening in one of said mold means; and

(d) venting gases from said mold cavity to the atmosphere during the injecting through a plurality of openings provided in one of said mold means and disposed along the interface of said mold means with said wall.

4,284,123
ARRANGEMENT FOR PRODUCING INGOTS OF UNALLOYED AND ALLOYED STEELS

Erwin Plöckinger; Gert Kühnelt, both of Kapfenberg, and Peter Machner, Leoben, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Division of Ser. No. 856,272, Dec. 1, 1977, Pat. No. 4,157,110.
This application Feb. 21, 1979, Ser. No. 13,300
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1976, 2655602
Int. Cl.³ B22D *27/02, 7/10*
U.S. Cl. 164—515 **7 Claims**



2. An arrangement for producing ingots of unalloyed and alloyed steels having an improved primary crystallization, reduced ingot segregation and a reduced content of non-metallic inclusions, which arrangement includes an ingot mould having a rim and a cavity adapted to be filled with molten steel covered with a slag mixture, energy means for supplying heat to the slag mixture, and a thermally conductive top part secured to said mould, the improvement comprising

an annular projection provided on said top part adapted to extend below the level of molten steel in said mould, said projection being adapted to cool the molten steel in contact with it over a region inward from the rim; and

detachable connecting means provided for securing said top part to the rim of the mould, said connecting means including means for lowering said projection into the mould and means for detachable the top part from the mould upon the formation of an ingot skin during solidification.

4,284,124
DIE CASTING MACHINE FOR MANUFACTURING HEAT RESISTANT IMPELLERS

Mikiya Komatsu; Syuichi Takashima, and Syunsuke Suzuki, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

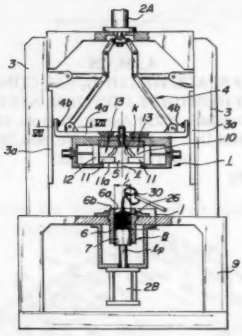
Filed Jun. 29, 1979, Ser. No. 53,324
Claims priority, application Japan, Jul. 6, 1978, 53/81415
Int. Cl.³ B22D *17/12*
U.S. Cl. 164—314 **7 Claims**

1. A die casting machine for manufacturing a heat resistant impeller having substantially curved blades, comprising:

a die assembly provided with a plurality of die segments displaceable substantially radially with respect to the axis thereof between an inner closed position and an outer closed position, and means for causing such displacements of the die segments, the die segments including cavity forming portions and runner forming portions, while the

die segments are in their inner closed position the cavity forming portions defining a cavity and the runner forming portions defining a runner communicating with the cavity, the cavity forming portions of the die segments being formed with first recesses to provide rib-shaped projections extending outwardly from the periphery of the blades of the impeller;

an injection assembly disposed below the die assembly and provided with an injection sleeve arranged coaxially with



the axis of the die segments, a plunger reciprocally arranged within the sleeve, and means for driving the plunger; and

means for displacing the die assembly axially between an uppermost position in which the die assembly is spaced from the injection assembly to permit molten metal to be poured into the sleeve and a lowermost position in which the runner defined by the die segments is brought into communication with the interior of the sleeve.

4,284,125

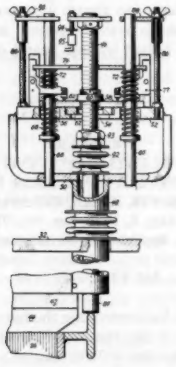
FAIL SAFE ARRANGEMENT

Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,056

Int. Cl.³ F28D *19/00*

U.S. Cl. 165—9 **6 Claims**



1. Rotary regenerative heat exchange apparatus having a rotor including a central rotor post and a concentric rotor shell spaced therefrom to provide an annular space therebetween, a mass of heat absorbent material carried in the annular space between the rotor post and the rotor shell, a housing surrounding the rotor in spaced relation to include inlet and outlet ducts at opposite ends thereof for a heating fluid and for a fluid to be heated, means for rotating the rotor about its axis, a sector plate intermediate the end of the rotor and the rotor housing adapted to maintain the heating fluid separate from the fluid to be heated, support means for a sector plate at the inboard end of the rotor, actuating means at the outboard end of the sector plate adapted to deform the sector plate to conform to the profile of the rotor, an axially disposed sensor rod reciprocally mounted on said housing and having an end face thereof abutting an axial edge of the rotor, and a snap-acting release means responsive to movement of the sensor rod adapted to move said sensor rod rapidly away from the rotor to preclude interference therebetween.

4,284,126

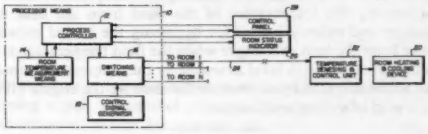
ENVIRONMENTAL CONTROL SYSTEM FOR A MULTIPLE ROOM STRUCTURE

N. Rick Dawson, 220 Fentress Blvd., Daytona Beach, Fla. 32014

Filed Jul. 5, 1979, Ser. No. 55,043

Int. Cl.³ F24F *3/00*; G05D *23/19*

U.S. Cl. 165—11 A **18 Claims**



1. An environmental control system for a multiple room structure having an independently actuatable heating and cooling device in each of said rooms, said system operating by monitoring the ambient air temperature in each of said rooms and controlling the operation of each of said heating and cooling devices to achieve a desired ambient air temperature in each of said rooms, said system comprising:

a. a room status indicator for indicating the occupied or vacant status of each of said rooms;

b. a control unit for permitting an operator to assign heating mode and cooling mode temperature limits to each of said rooms;

c. a temperature sensing and control unit positioned in each of said rooms and coupled to said heating and cooling device in each of said rooms for measuring the ambient room air temperature and determining the operating mode of said heating and cooling device, and for controlling the operating mode of said heating and cooling device in response to a control signal, said temperature sensing and control unit including first temperature measurement means for measuring the ambient air temperature in said room and second temperature measurement means for measuring the temperature of the conditioned air discharged from said heating and cooling device; and

d. processor means coupled to said room status indicator, to said control unit and to each of said temperature sensing and control units for determining the desired ambient room air temperature for each room and for transmitting an appropriate control signal to each of said temperature sensing and control units to continuously control each of said heating and cooling devices to achieve the desired ambient room air temperature in each of said rooms.

4,284,127

CARPET CLEANING SYSTEMS

David S. Collier, Islington, and Allan S. Muxworthy, Mississauga, both of Canada, assignors to Syd W. Collier Company Limited, Toronto, Canada

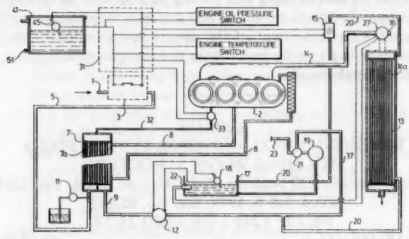
Filed Jun. 1, 1979, Ser. No. 44,566

Int. Cl.³ G05D *23/00*; A47L *11/34*

U.S. Cl. 165—35 **11 Claims**

1. A fluid heating system for use in an engine having heated

engine coolant and heated exhaust, said system comprising a preheater through which the heated engine coolant is conducted, a heater exchanger through which the heated exhaust is directed, fluid conduit means in both the preheater and the heat exchanger to maintain the fluid separately of the heated coolant and exhaust respectively, sensing means for sensing the



presence of fluid in the heat exchanger, a temperature sensor, for sensing the temperature of the fluid from the heat exchanger and exhaust bypass for bypassing the heated exhaust away from the heat exchanger when the fluid temperature is at an unacceptably high level as sensed by the temperature sensor and automatic shutdown controls for shutting the engine off in the event of system malfunction.

4,284,128

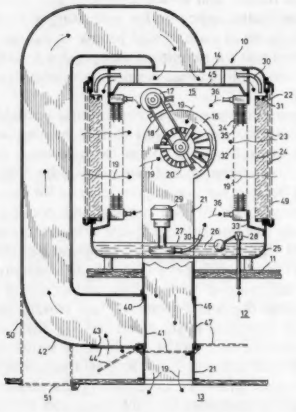
AIR CONDITIONER AND HEAT DISPENSER

Donald A. Nelson, 5755 S. Village Way, Ogden, Utah 84403

Filed Oct. 19, 1979, Ser. No. 86,343

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—48 R **15 Claims**



1. In an evaporative air temperature conditioner adapted for installation to draw and impel exterior air into a building and comprising an air blower and driving means therefor, said blower having an air inlet opening and connecting with an air outlet duct generally for discharging the air into an occupant space of the building; a housing having a generally horizontal bottom member, a generally horizontal top member and upstanding side members, the side, top and bottom members being sealably connected to capture a space therewithin enclosing the blower air inlet; at least one air admitting, air permeable, water impregnable pad communicating with the exterior air and closing an opening provided therefor in at least one of the housing members; and means controllably directing water to said pad; the improvement comprising:

a heat exchanger disposed between the pad and the air inlet and having a fluid inlet and a fluid outlet and a passage therethrough connecting the fluid inlet and outlet, so that heat exchanger fluid may be circulated through the heat exchanger;

means directing cooled air from the pad to the heat exchanger; and

air valving means carried by the air outlet duct directing air selectably from the blower into the occupant space or diverting said air therefrom.

4,284,129

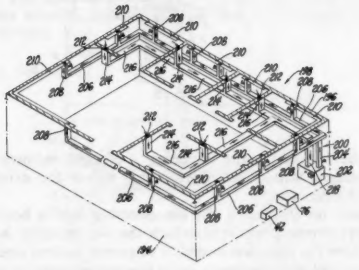
BASEBOARD SPACE HEATING, AIR CONDITIONING AND HUMIDITY CONTROL SYSTEM

Lawrence D. Rogalski, 20210 Annott, Detroit, Mich. 48205

Filed Dec. 4, 1978, Ser. No. 966,205

Int. Cl.³ F24F *3/00*

U.S. Cl. 165—50 **13 Claims**



1. An integrated baseboard/humidification/air conditioning system, comprising an elongated baseboard having a heater/humidification compartment and a separate air conditioning passage, said heater/humidification compartment having at least one baseboard heater element supported horizontally therein, with a humidification pan supported adjacent said heater element and a drip pan supported below said humidification pan, said humidification pan comprising an open-top pan having a bottom wall and oppositely disposed end walls and side walls, said pan having disposed therein a porous absorbent block adapted to absorb water and allow passage of air therethrough and a walled opening in said bottom wall through which air heated by said heater element may rise to said porous block.

4,284,130

HEATING INSTALLATION HAVING A RADIATION- AND CONVECTION FLOOR HEATER

Jiri Elias, Im Wingert 18, Zürich, Switzerland

Filed Aug. 6, 1976, Ser. No. 712,410

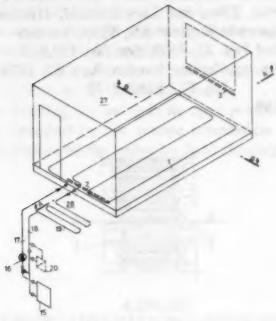
Claims priority, application Switzerland, Aug. 21, 1975, 10935/75

Int. Cl.³ F24D *5/10*

U.S. Cl. 165—53 **10 Claims**

1. An installation for controlling the temperature of a room, wherein the floor of the room is formed with at least one channel which is provided with at least two openings establishing communication between the room and the interior of the channel at two positions which are spaced apart along the channel so that air of the room can enter the channel by way of one opening and can pass along the channel and return to the room by way of the other opening, at least one elongate floor element is arranged in parallel to said channel and in thermally-conductive contact with the interior thereof to influence the temperature of air passing along said channel, and a

device is connected to the floor element for controlling the temperature thereof whereby the extent to which the floor



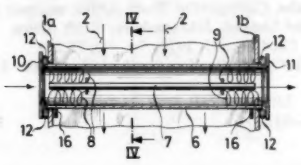
element influences the temperature of air passing along the channel may be controlled.

4,284,131

COOLER FOR HOT SMOKE-LADEN GASES

Adolf Margraf, Am Schleplingsbach 46, Stadthagen Wendthagen, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,826
Int. Cl.³ F28F *9/12*
U.S. Cl. 165—76 **2 Claims**



1. A cooler for hot smoke-laden gases which are to be cleaned by a pocket or tube filter situated in a downstream location, the cooler having a housing of generally rectangular horizontal cross section through which the smoke-laden gas flows from top to bottom or from bottom to top, and which is provided with cooling elements within the housing through which cold external air is conducted perpendicularly to the direction of flow of the smoke-laden gas around the cooling elements, and wherein:

the cooling elements are loose tubes of generally oval or flattened oval shape, which project through openings in two opposing walls of the cooler housing,

said tubes being arranged above one another and in parallel rows,

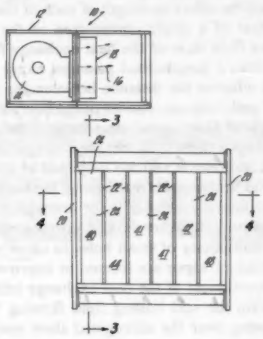
an annular flange associated with each end of each cooling tube outside the cooler housing, which, by means of at least one traction or compression spring, presses an annular gasket situated between itself and the outer wall of the housing into the annular gap between the cooling tube and the associated opening in the wall of the housing, and wherein the cooling tubes have in the vicinity of their ends at least one supporting abutment which bears against the inside of the walls of the housing.

4,284,132

APPARATUS FOR CONDITIONING AIR

Charles A. Strand, Sr., 21800 Morley Ave., Apt. 817, Dearborn, Mich. 48124

Filed Oct. 12, 1976, Ser. No. 731,118
Int. Cl.³ F28F *27/02*
U.S. Cl. 165—103 **15 Claims**



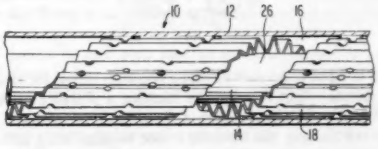
1. Apparatus for conditioning air comprising; a housing forming a pair of parallel passages having a common wall therebetween, means for moving air through said passages, heat exchange means disposed in one of said passages to form a heat exchange passage, the other of said passages forming a bypass passage, a pair of air gates controlling the opening and closing of said pair of passages, respectively, each of said air gates being supported for movement between open and closed positions at walls of said passage spaced from said common wall; and means connecting said pair of air gates together for simultaneous movement equal distances and in opposite directions with one of said air gates movable from an open to a closed position while the other of said air gates is moved from a closed toward an open position, said air gates being shaped to maintain a uniform opening therebetween for the passage of air from said pair of passages for all positions of said air gates.

4,284,133

CONCENTRIC TUBE HEAT EXCHANGE ASSEMBLY WITH IMPROVED INTERNAL FIN STRUCTURE

Sebastian J. Gianni, Wethersfield, Conn., and William M. Seeley, Brewster, N.Y., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Sep. 19, 1979, Ser. No. 77,067
Int. Cl.³ F28F *13/00*; F28D *7/10*
U.S. Cl. 165—133 **4 Claims**



1. In an evaporative heat exchange unit comprising at least one tube assembly formed by a pair of concentrically positioned tubes defining a substantially annular boiling fluid heat exchange chamber therebetween and which is connected at its ends for the flow of a boiling heat exchange fluid therethrough, an internal metallic fin assembly within said annular chamber comprising a strip of corrugated sheet metal extending spirally within said annular chamber with the corrugations being substantially straight and non-distortable and extending longitudi-

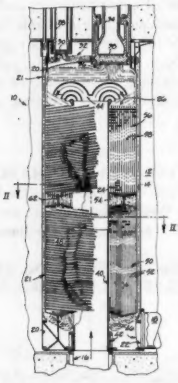
nally of said annular chamber and bridging the space between said tubes to divide said annular chamber into a plurality of substantially parallel longitudinal passages each extending between the side edges of the strip of corrugated sheet metal, the adjacent turns of the spirally formed strip of corrugated sheet metal being spaced from each other to provide a spiral passage between the side edges of the adjacent turns and to thereby reduce the effective length of each of the longitudinal passages to that of a single corrugation of the strip and to permit arcuate fluid flow of the heat exchange fluid between the serially related longitudinal passages along said annular chamber and wherein the distance between the tubes is such that the inner and outer peripheries of the internal metallic fins of the corrugated sheet metal strip have radial compression forces exerted upon them such that the corrugations are placed under radial compression and are subjected to sufficient force to insure a good heat transfer relationship between each of said tubes and said internal metallic fin of corrugated sheet metal strip, the improvement wherein said corrugated sheet metal strip bears a multiplicity of small holes to cause points where localized bubbles of vapor are formed to improve the boiling heat transfer coefficient of the heat exchange unit corrugated sheet metal strip for said boiling fluid flowing between the tubes and passing over the corrugated sheet metal strip surfaces.

4,284,134

HELICALLY COILED TUBE HEAT EXCHANGER

Arthur M. Harris, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sep. 5, 1978, Ser. No. 939,357
Int. Cl.³ F28D *7/10*
U.S. Cl. 165—163 **11 Claims**



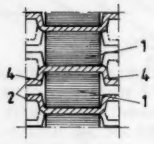
1. In a vapor generator having a housing, means for circulating a primary fluid through the housing, a plurality of helical tube bundles arranged along a flow path of primary fluid within the housing, the helically coiled bundles being interconnected in series with each other and with inlet and outlet means for circulating a secondary fluid through the tubes, the improvement comprising each of the tube bundles being arranged within the housing so that the primary fluid flows generally parallel with the axis of each tube bundle, the two tube bundles having the same number of heat exchange tubes, pitch values for the tubes in the respective tube bundles, taken transverse to the path of primary coolant flow, being selected as a ratio of two unequal integers in order to facilitate design and efficient operation of the respective tube bundles in the vapor generator.

4,284,135

DEVICE FOR MUTUALLY FIXING PLATE ELEMENTS OF PLATE HEAT EXCHANGERS OR PLATE FILTERS

Christer Almqvist, Täby, and Lars Lindahl, Handen, both of Sweden, assignors to ReHeat AB, Täby, Sweden

Filed Feb. 22, 1980, Ser. No. 123,815
Claims priority, application Sweden, Aug. 31, 1978, 7809204
Int. Cl.³ F28F *3/10*
U.S. Cl. 165—166 **1 Claim**



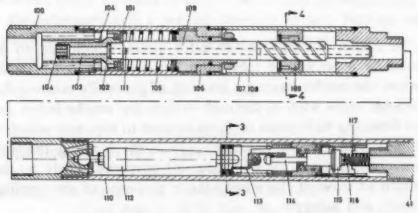
1. A plate element at plate heat exchanger or plate filter assembled of several such plate elements, each plate element provided with distance members embossed in the plate substantially in the form of corrugations, which distance members of two adjacent plates intersect one another, characterized in that the gasket groove known per se for receiving a gasket located between the plates and extending about the plate is embossed with its bottom extending in a plane located approximately centrally between the tops of two adjacent distance members directed to opposed sides of the plate, and that each distance member terminating in the gasket groove shows toward the same a surface, the height of which corresponds approximately to half the total thickness of the plate, which surfaces at the mounting of the plates form supporting surfaces in lateral direction for the gasket.

4,284,136

POSITIONING DEFLECTION WEDGES

Johan G. Grabe, Carletonville, South Africa, assignor to Boart International Limited, Johannesburg, South Africa

Filed Sep. 27, 1979, Ser. No. 79,259
Claims priority, application South Africa, Feb. 15, 1979, 78/0917
Int. Cl.³ E21B *7/06, 23/04, 29/06*
U.S. Cl. 166—117.5 **5 Claims**



1. Means for positioning a deflection wedge in a drill hole, which has a pronounced horizontal component of direction, comprising: an extension composed of two parts, the first part being a cylinder adapted to be secured to the drill string and in communication with the axial cavity of the drill string, and the second part being free to rotate relatively to the cylinder;

a deflection wedge detachably carried by the second part;

a piston reciprocable in the cylinder between first and second positions and exposed to fluid flowing down the drill string to cause it to move towards the second position;

a spring biasing the piston to its first position;

rotation means operable by the piston to cause the second part to rotate relatively to the cylinder when the piston moves towards its second position;

a wedge orientation mechanism carried by the second part of the extension adapted to stop rotation of the second part of the extension upon a preset orientation of the deflection wedge being achieved;

a flow path between the cylinder and the end of the second part into the hole being deflected;

a restrictive orifice between the cylinder and the second part; a valve in the flow path; and

a trigger holding the valve in its open position and adapted to be operated by the wedge orientation mechanism to allow closure of the valve by fluid flowing in the path.

4,284,137

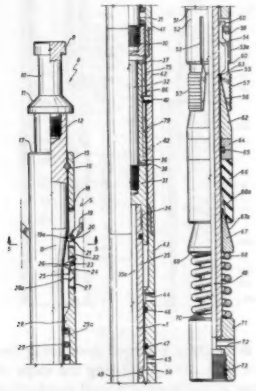
ANTI-KICK, ANTI-FALL RUNNING TOOL AND INSTRUMENT HANGER AND TUBING PACKOFF TOOL

William T. Taylor, P.O. Box 309, Warren, Tex. 77664

Filed Jan. 7, 1980, Ser. No. 109,896

Int. Cl.[3] **E21B** *33/128, 33/129*

U.S. Cl. 166—137 **15 Claims**



14. An apparatus for enabling isolation of a production zone of a well bore having a tubing string therein and for enabling desired tests to be run in the zone comprising:

an elongate mandrel;

packer means incorporating a resilient expandable element including a flaired skirt mounted with said mandrel for expansion outwardly into contact with the tubing sting;

a collar and sleeve mounted about said mandrel above said packer means, said collar including depending flexible fingers thereon;

a second set of rigid fingers mounted with said collar about said mandrel and having a like amount of fingers on said collar fingers, one of each of said second set of fingers extending outwardly from beneath one of each of said collar fingers;

first taper means mounted above said packer means and adjacent and beneath said rigid fingers; and

second taper means mounted beneath said packer means adjacent said skirt wherein upward movement of the mandrel causes each of said taper means to move upwardly to force said rigid fingers and said packer element outwardly to contact the tubuing string which thereby prevents unwanted movement of the mandrel and isolates the zone below the element by enabling the element to seal between the mandrel and string.

4,284,138

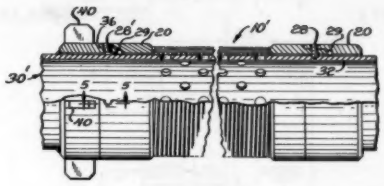
COATED SCREEN JACKET AND COATED PIPE BASE ASSEMBLY AND METHOD OF MAKING SAME

Richard E. Allred, St. Paul, Minn., assignor to UOP Inc., Des Plaines, Ill.

Filed May 27, 1980, Ser. No. 153,808

Int. Cl.[3] **E03B** *3/18;* **E21B** *43/08*

U.S. Cl. 166—233 **8 Claims**



1. A pipe base well screen assembly comprising an internal metallic pipe member having an extended perforated region and non-perforated regions at each end of said perforated region, a metallic fitting welded to said pipe member in one of said unperforated regions, a layer of corrosion resistant bonded coating material completely covering all exposed portions of said pipe member and said welded metallic fitting; a metallic screen jacket member having flow openings therein which overlie the perforated region of said pipe member and a metallic, male-shaped fitting welded to one of its ends and a complementary female-shaped fitting welded to the other of its ends, a layer of corrosion resistant bonded coating material completely covering all exposed portions of said screen jacket portion and said welded metallic fittings, one of said fittings on said screen jacket member being telescopically engaged with said fitting on said pipe member and affixed thereto by a first plurality of fasteners which pass radially through overlapping portions of each of the engaged fittings, and O-ring seals in engagement with each of said fittings and with the non-perforated regions of said pipe member for preventing passage of fluid between said screen jacket and pipe member except through said flow openings.

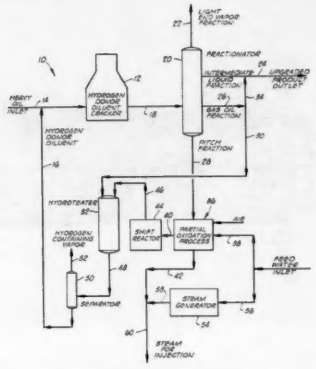
7. A method of assembling a coated screen jacket to a coated pipe base which has perforations along a portion of its length comprising the steps of welding a male slip fitting to one end of an uncoated screen jacket and welding a complementary, female slip fitting to the other end thereof; welding a slip fitting which is complementary to one of said slip fittings on said screen jacket to said pipe base in an area thereof which is spaced from and axially adjacent to said perforated portion; applying a protective layer of coating material to said screen jacket and its slip fittings and to said pipe base and its fitting while said screen jacket and pipe base are out of assembled relationship; assembling said coated screen jacket and slip fitting to said coated pipe base so that said complementary slip fittings telescopically engage each other and an O-ring sealing member positioned on one of said fittings which engages the other of the fittings and the pipe base; placing a plurality of retaining fasteners into aligned, radially directed apertures in said telescopically engaged slip fittings to anchor said screen jacket to said pipe base; and placing an additional O-ring sealing member in contact with the pipe base and with the end of said screen jacket which is remote from said engaged slip fittings.

4,284,139

PROCESS FOR STIMULATING AND UPGRADING THE OIL PRODUCTION FROM A HEAVY OIL RESERVOIR

Glenn A. Sweany, Stamford, Conn., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 28, 1980, Ser. No. 125,594
Int. Cl.³ C10G *13/00*; E21B *43/24*
U.S. Cl. 166—267 **8 Claims**



1. A process for stimulating and upgrading the oil production from a heavy oil reservoir comprising the steps of:

(a) combining heavy oil produced from said reservoir with a hydrogen donor diluent;

(b) subjecting the mixture of heavy oil and hydrogen donor diluent to thermal cracking in a hydrogen donor diluent furnace;

(c) fractionating the cracked products from said hydrogen donor diluent furnace into a light end vapor fraction, an intermediate liquid fraction, a gas oil fraction and a pitch fraction;

(d) hydrogenating at least a portion of said gas oil fraction by contacting said portion with a hydrogen-containing gas stream in a hydrotreater to produce the hydrogen donor diluent combined with said heavy oil in accordance with step (a) and an unreacted hydrogen-containing gas stream effluent;

(e) subjecting said pitch fraction to partial oxidation to produce the hydrogen-containing gas stream utilized in step (d) and a by-product gas stream;

(f) generating steam in a steam generator;

(g) combining said steam generated in step (f) with the by-product gas stream from step (e);

(h) injecting said combined steam-by-product gas stream into said heavy oil reservoir to thereby stimulate the production of heavy oil therefrom; and

(i) utilizing said light end vapor fraction from step (c) and said unreacted hydrogen-containing gas stream effluent from step (d) as fuel for said process.

4,284,140

USE OF POTASSIUM HYDROXIDE SOLUTIONS IN A WELL BORE

Robert D. Sydansk, Littleton, Colo., and Frank S. Cordiner, Anchorage, Ak., assignors to Marathon Oil Co., Findlay, Ohio

Filed Jun. 30, 1980, Ser. No. 164,620
Int. Cl.³ E21B *33/16, 43/22, 37/00*
U.S. Cl. 166—291 **40 Claims**

1. In a process for working over a well bore penetrating and communicating with a water-sensitive, subterranean sandstone formation wherein a fluid is injected into and maintained within the well bore while a workover operation is performed, wherein the sandstone formation contains fine particles which interact with an aqueous solution having an ionic makeup distinct from connate water to reduce permeability of the formation and fluid flow therethrough, and wherein the injected fluid invades the sandstone formation and contacts at least a portion of the fine particles, the improvement comprising:

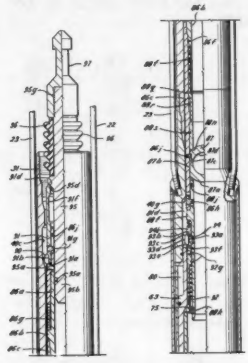
incorporating potassium hydroxide into said injected fluid in an amount sufficient to effectively render said contacted fine particles relatively insensitive to said aqueous solution having a distinct ionic makeup for a substantial period of time, said potassium hydroxide existing in said injected fluid as potassium ions and hydroxide ions, said hydroxide ions interacting with said sandstone formation in the presence of said potassium ions to effectively render said contacted fine particles relatively insensitive to said aqueous solution having a distinct ionic makeup.

4,284,141

SUBSURFACE WELL APPARATUS AND METHOD

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 131,629, Apr. 6, 1971, Pat. No. 3,762,471. This application Jun. 11, 1973, Ser. No. 368,840
Int. Cl.³ E21B *23/00, 43/00*
U.S. Cl. 166—315 **8 Claims**



1. A method of operating a well producing hydrocarbons from a subsurface formation, including the steps of:

controlling flow in the bore of a well production tubing by a safety valve connected in the production tubing at a subsurface location in the well by controlling the control fluid pressure communicated to the safety valve from the surface;

placing a flow control assembly in the bore of the production tubing at the wellhead;

moving the flow control assembly through the bore of the production tubing to the safety valve;

securing the flow control assembly in the bore of the production tubing adjacent the safety valve; and,

operating the flow control assembly with the control fluid communicated to the safety valve for controlling flow through the production tubing with the flow control assembly.

4,284,142

METHOD AND APPARATUS FOR REMOTE INSTALLATION AND SERVICING OF UNDERWATER WELL APPARATUS

Kerry G. Kirkland, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed May 7, 1979, Ser. No. 36,658
Int. Cl.³ E21B *17/02, 23/00, 33/035*
U.S. Cl. 166—344 **16 Claims**

1. The method for carrying out operations in an underwater well installation from an operational base at the surface of the

body of water when the well installation comprises an underwater wellhead body supporting blowout preventers, comprising

providing a composite handling joint which presents an outer cylindrical surface longer than the effective length of the blowout preventers, the handling joint defining

at least one larger diameter longitudinal passage to be placed in communication with pipe in the well,

a plurality of small longitudinal pressure fluid passages, and

internal space surrounding said passages;

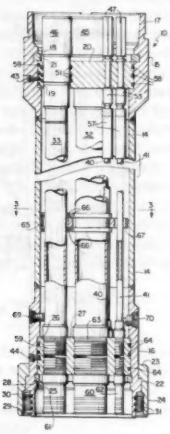
providing a handling tool comprising

movable fluid pressure operated means,

means defining pressure fluid passages for controlling flow of pressure fluid to operate the movable means, and

passage means for communicating with pipe in the well;

securing the handling tool to the lower end of the composite handling joint with the pressure fluid passages of the tool in communication with respective ones of the pressure fluid passages in the composite handling joint and with said passage means of the tool communicating with said at least one larger diameter passage of the composite handling joint;



filling with liquid the internal space surrounding the passages in the composite handling joint;

lowering the composite joint and handling tool from the operational base with the aid of guidance means to position the handling tool in the wellhead with the cylindrical outer surface of the composite handling joint then extending through the blowout preventers;

operating the handling tool remotely by pressure fluid supplied via pressure fluid passages of the composite joint;

maintaining communication between the operational base and pipe in the well via the at least one larger diameter passage of the composite handling joint,

the outer surface of the composite handling joint being operatively presented to the blowout preventers throughout the step of operating the handling tool, whereby successful operation of the blowout preventers is made independent of the rotational position occupied by the composite handling joint; and

admitting fluid under pressure to the internal space surrounding the passages within the composite handling joint when pressure external to the composite handling joint exceeds a predetermined value.

4,284,143

SYSTEM FOR THE REMOTE CONTROL, THE MAINTENANCE OR THE FLUID INJECTION FOR A SUBMERGED SATELLITE WELL HEAD

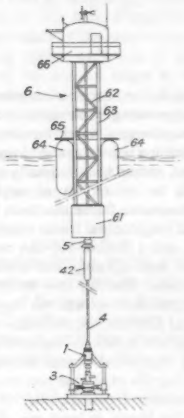
Norbert Scherrer, Saint Marcel, and Pierre Ory, Lepecq, both of France, assignors to Societe Europeenne de Propulsion, Puteaux, France

Continuation-in-part of Ser. No. 936,783, Aug. 15, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 58,861

Claims priority, application United Kingdom, Mar. 22, 1979, 10118/79

Int. Cl.[3] **E21B** *33/068, 33/072*

U.S. Cl. 166—350 **8 Claims**



1. In an installation for extracting oil from an underwater oil field, and comprising at least one submerged wellhead mounted on a satellite well, and improved system for the remote control and maintenance of said satellite wellhead, said system comprising:

a surface non-submerged platform located substantially vertically of said satellite wellhead, and supporting equipment usable for the remote control and maintenance of said satellite wellhead, said equipment comprising a reception circuit and a remote control unit provided with a remote control power source and responsive to signals received by said reception circuit to remotely control said satellite wellhead;

a wellhead control device located adjacent said satellite wellhead;

at least one remote control line connecting said remote control unit to said control device;

at least one pipeline connecting said platform to said wellhead;

a connection for connecting said pipeline to said platform; and

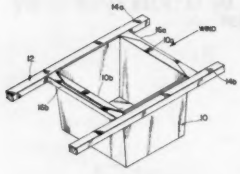
a spherical articulation connecting said pipeline to said satellite wellhead and comprising at least one stack of alternating layers of a rigid material and elastic material which are adhered to each other and are disposed in accordance with spherical surfaces.

4,284,144

PASSIVE EXPLOSION BARRIER FOR MINES

Israel Liebman, Library; John Corry, Elrama, and Richard Pro, Pittsburgh, all of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 3, 1979, Ser. No. 81,505
Int. Cl.³ A62C *35/04*
U.S. Cl. 169—64 **3 Claims**



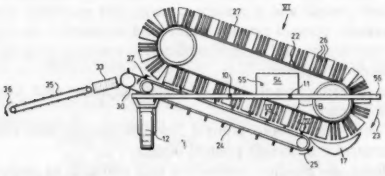
1. A passive explosion barrier arrangement for use in mining operations in suppressing explosions in a mine, said barrier arrangement comprising a frame mounted to the roof of the mine and comprising a pair of spaced longitudinal frame members which, in use, extend longitudinally in the direction of the wind that would be created by an explosion and first and second spaced transverse frame members located between and connected to said longitudinal frame members which define an opening therein, and a flexible tub-like receptacle mounted in the frame within said opening and containing an explosion suppressing substance therein, said receptacle including first and second integral lips formed on opposite edges thereof which engage said first and second transverse frame members and constitute the sole means for supporting said receptacle on said frame, such that wind forces during an explosion will distort the lip facing the explosion and cause curving of the lip back off the transverse frame member so as to disengage the receptacle from the frame, at least one of said lips being beveled at the sides thereof adjacent the side walls of the receptacle so as to increase the sensitivity of the response of the barrier to low speed winds.

4,284,145

SEPARATOR DEVICE

Peter S. Small, and Peter W. Small, both of Forfar, England, assignors to Tonparo Limited, Edinburgh, Scotland

Filed Sep. 5, 1978, Ser. No. 939,113
Claims priority, application United Kingdom, Sep. 10, 1977, 37835/77
Int. Cl.³ A01D *33/02*
U.S. Cl. 171—18 **12 Claims**



1. A device for separating round root crops from soil and other unwanted material comprising:

a first endless conveyer element having upper and lower runs extending in a longitudinal direction;

a plurality of spaced harvesting members secured to said first conveyer element, said harvesting members being inclined transversely across the width of said first conveyer element at an angle of less than 90° with respect to said longitudinal direction;

a second endless conveyer element having upper and lower runs, the upper run of said second conveyer element being adjacent to the harvesting members secured to said first conveyer element, the upper run of said second endless conveyer and said harvesting members forming harvesting pockets therebetween;

means for delivering said crop, soil and unwanted material in discrete portions into said harvesting pockets; and

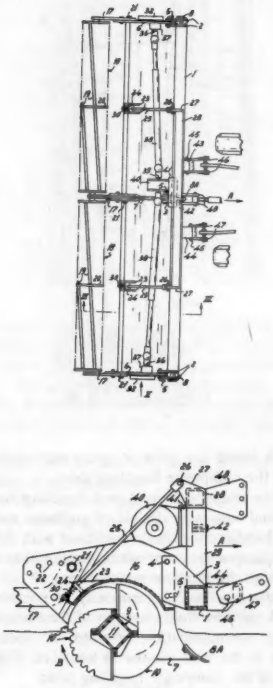
means for driving one of said first and second conveyer elements at a higher speed than the other, round objects comprising part of said crops, soil and unwanted material rolling in the direction of incline of said harvesting member out of said harvesting pockets thereby separating said round objects from the rest of said crops, soil and unwanted material.

4,284,146

SOIL WORKING MACHINE

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Aug. 14, 1979, Ser. No. 66,761
Claims priority, application Netherlands, Aug. 21, 1978, 7808608
Int. Cl.³ A01B *33/00, 33/02, 33/10, 33/14*
U.S. Cl. 172—47 **22 Claims**



1. A soil working machine comprising a frame and a rotor pivotably supported on said frame, said rotor comprising soil working means on a carrier mounted for rotation about a non-vertical axis that extends generally transverse to the direction of machine travel and driving means connected to drive said rotor about said axis during operation, said rotor being connected to said frame by either one of two pairs of pivotal connections, the connections of each pair being spaced from

one another in a direction transverse to the direction of machine travel and comprising pivot pins having registering pivotal axes, the respective pivotal axes coinciding with the longitudinal center lines of corresponding pins which can be inserted into openings in plate means to define said pivot connections, said plate means having a plurality of openings and said pins being insertable in any of said openings to define respective pivot connections at different level settings, whereby the resistance to upward pivotal deflection by said rotor can be changed.

12. A soil working machine comprising a frame and a rotor pivotably supported on said frame, said rotor comprising soil working means on a carrier mounted for rotation about a non-vertical axis that extends generally transverse to the direction of machine travel and driving means connected to drive said rotor about said axis during operation, said soil working means comprising a plurality of flat members and each member having an outer curved serrated periphery that defines the operative surface of said rotor, the said periphery of each member being curved and extending over a circumferential angle of about 180° and said curve being substantially an involute.

18. A soil working machine comprising a frame and a rotor pivotably supported on said frame, said rotor comprising soil working means on a carrier mounted for rotation about a non-vertical axis that extends generally transverse to the direction of machine travel and driving means connected to drive said rotor about said axis during operation, said frame having a coupling for connection to the lifting device of a tractor, said coupling including adjusting means that positions said carrier obliquely to the direction of machine travel, said soil working means comprising a plurality of flat elements that lie in a plane substantially perpendicular to the rotor axis of said carrier, said coupling comprising two coupling points for the lower arms of the lifting device and said coupling points being located at different distances from the frame, said coupling points comprising two brackets of different lengths to which lower arms of said lifting device are fitted, said brackets being replaceable one by the other and releasably connected to support members on said frame, said support members having different lengths, the total length of the shorter bracket and the longest support being substantially equal to that of the longer bracket and the shorter support.

4,284,147

CONTROL DEVICE FOR THE FORWARD MOVEMENT AND REARWARD MOVEMENT OF PNEUMATIC RAM BORING DEVICES

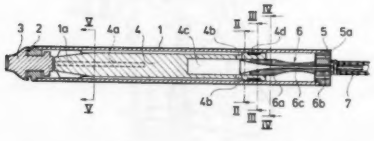
Gustav Jenne, Schmachtenbergstrasse 93, 4300 Essen-Kettwig, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,142

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756567

Int. Cl.[3] **F01L** *21/02;* **F01B** *7/18*

U.S. Cl. 173—91 **8 Claims**



1. In a control device for two working cycles of forward movement and rearward movement respectively of a self-propelled pneumatic ram boring device with an impact piston which is axially displaceable in a control stroke between two abutments, respectively impacting one of the abutments in each working cycle, in an altogether tubular-shaped housing, whereby the axial forward movement and rearward movement of the ram boring device is controllable by rigid control edges of an adjustable control sleeve, the latter being supported on a bearing ring arranged in the rear part of a tubular-shaped housing, through which bearing ring a part of the control sleeve, which part is formed as a feed tube for compressed air, is led for connection to a compressed air hose, and which sleeve has a piston-shaped control head containing the control edges, the control head engaging in a cylindrical recess at a rear end of the impact piston cooperates with radial at least one control bore which are formed in the impact piston in the vicinity of the recess, the improvement wherein

the control sleeve is mounted non-displaceably in the axial direction however rotatably in the bearing ring and is formed with at least four control edges, the control edges respectively being arranged in pairs with axial spacing between said control edges of each pair, forming two different types of pairs, said axial spacing of each said pair corresponding to the control stroke respectively of the impact piston, and said control edges of respectively each said two different types of pairs being offset in the peripheral direction as well as in the longitudinal direction such that respectively in one rotated position of said control sleeve during operation of the ram boring device in one of the two working cycles, only one of said two different types of pairs of the control edges is aligned with and cooperates with the at least one control bore and the other of the two different types of pairs is not aligned with and does not cooperate with at least one control bore, the latter being arranged only on a part of the periphery of the impact piston, and said impact piston being guided non-rotatable in the housing.

4,284,148

PORTABLE HAMMER DRILL WITH ROTATING TOOL

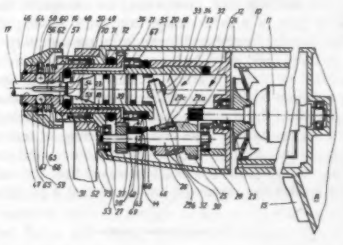
Karl Wanner, Echterdingen, and Manfred Bleicher, Leinfelden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,798

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820128

Int. Cl.[3] **B23B** *45/02;* **B25D** *11/00, 16/00, 17/24*

U.S. Cl. 173—109 **18 Claims**



1. A portable machine tool, such as a hammer drill, comprising housing means; a piston guided in said housing means for reciprocation in axial direction; a beater coaxial with said piston to be reciprocated by said piston during reciprocation of the latter; tool receiving means comprising a turning sleeve surrounding said beater and a holding bushing extending beyond said beater and fixedly connected to said turning sleeve for movement therewith, said holding bushing being formed with an axial bore therethrough having an open end facing said beater; a tool having a shaft extending through said bore towards said beater and having a free end for directly receiving the impact energy provided by the beater during reciprocation thereof, said tool shaft being guided in said bore for limited reciprocation in axial direction and held therein for rotation with said holding bushing; drive means in said housing means; first transmission means between said drive means and said piston for reciprocating the latter; second transmission means

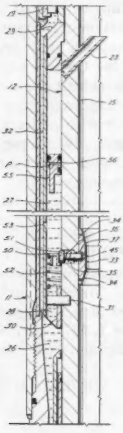
between said drive means and said turning sleeve for rotating said turning sleeve; first cooperating means on said shaft and said holding bushing for rotating said shaft together with said bushing, said first cooperating means comprising a pair of diametrically opposite axially extending teeth elements respectively engaging in a pair of diametrically opposite groove elements having open ends facing said beater, one of said pair of elements being provided on said shaft and the other on said holding bushing; and second cooperating means for limiting axial movement of said shaft relative to said holding bushing.

4,284,149

WELL DRILLING TOOL

Fred K. Fox, Houston, Tex., assignor to Engineering Enterprises, Inc., Houston, Tex.

Filed Apr. 27, 1979, Ser. No. 33,554
Int. Cl.[3] E21B *47/00*
U.S. Cl. 175—40 **17 Claims**



1. A well drilling tool, comprising an elongated body connectible as part of a drill string, said body having relatively rotatable tubular members forming a passageway through which drilling fluid may be circulated and an annular space between the members, bearings within the annular space supporting one member from the other, means sealing between the members within the space to form a lubricant chamber for the bearings, means within the body providing a reservoir for supplying additional lubricant to the chamber, and means for indicating to an operator at surface level that the volume of lubricant within the reservoir has decreased a predetermined amount.

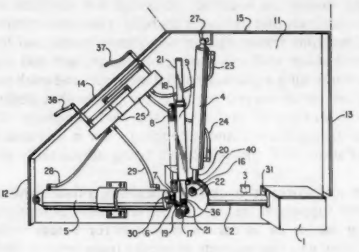
4,284,150

SOIL SAMPLING DEVICE

D. Lynn Davis, 310-28 St. So., Lethbridge, Alberta, Canada (T1J 3S6)

Filed Jul. 6, 1979, Ser. No. 55,141
Int. Cl.[3] E21C *5/00*
U.S. Cl. 175—84 **5 Claims**

1. A soil sampling device comprising a probe assembly including a tubular probe, a probe assembly motive means, said probe assembly being pivotally attached at a first location thereon to said probe assembly motive means for limited pivotal movement relative thereto; a guide means, said guide means including a member mounted for linear reciprocal motion in the vertical direction, a first stop means on said member adapted to limit the upward movement thereof, said tubular probe assembly being pivotally attached at a second location thereon to said member, means to bias said member into its uppermost position, a second stop means on said probe assembly adapted to limit further pivotal movement of said probe assembly when the longitudinal axis of the probe is vertical, a soil sample receiving means having an opening therein for receiving soil samples from said tubular probe, wherein movement of said probe assembly motive means in a first direction initially causes said probe assembly to pivot about said first location thereon until the longitudinal axis of said probe is vertical at which position said second stop means prevents further rotation, thereafter continued movement of said probe assembly motive means in said first direction causes said probe



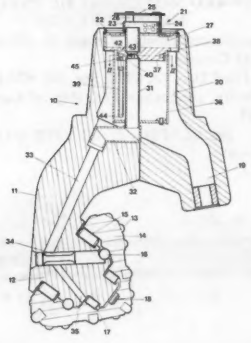
to move downwardly in the direction of the longitudinal axis of said probe, penetrating the soil which it is sampling, and movement of said probe assembly motive means in a direction opposite to said first direction causes the probe to be withdrawn vertically upward from the soil at which point said first stop means prevents further upward movement of said second point on said probe assembly and continued movement of said motive means in said opposite direction causes said probe assembly to pivot about said second location thereon thereby moving said probe to a horizontal position.

4,284,151

LUBRICATING DEVICE

Bert G. Levefelt, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 19, 1979, Ser. No. 86,436
Int. Cl.[3] E21B *10/24*
U.S. Cl. 175—227 **9 Claims**



1. Apparatus for lubricating rotary drills of the type comprising at least one roller cutter with a drill bit carrying cutting means thereon, and bearing means for rotatably supporting said roller cutter; said lubricating apparatus comprising:

at least one first passage means for conducting compressed air to the hole being drilled;

at least one second passage means for supplying compressed air to said bearing means for cooling same;

said second passage means including an inlet at a rear end thereof remote from said roller cutter;

said inlet disposed radially inwardly of said first passage means and communicating therewith so that compressed air from said first passage means enters said inlet;

said inlet including blocking means for diverting air from said first passage means radially outwardly;

a reservoir for carrying a lubricant;

at least one third passage means extending rearwardly from said reservoir and communicating with said second passage means; and

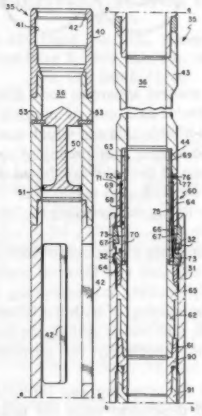
means for sucking lubricant from said reservoir through said third passage means and into said second passage means.

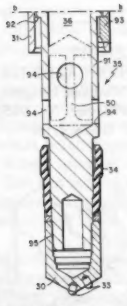
4,284,152

PUMP IN CORE BREAKER CARRIER

James B. Adams, Jr., Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 1, 1979, Ser. No. 90,391
Int. Cl.³ E21B *9/00*
U.S. Cl. 175—257 **8 Claims**





1. A core breaker carrier, comprising:

a. mandrel means having a longitudinal flow passage extending therethrough;

b. means for engaging one end of the mandrel means with a fishing tool;

c. means for engaging a core breaker to the opposite end of the mandrel means;

d. a first portion of the mandrel means comprising a locking mandrel for releasably anchoring the carrier at a preselected location within a drill bit;

e. means for restricting fluid flow through the longitudinal flow passage until the fluid pressure therein exceeds a preselected value anchoring the carrier within the drill bit;

f. the flow restricting means further comprising a piston having a first position releasably secured within the longitudinal flow passage near the one end of the mandrel means;

g. the piston having a second position near the opposite end of the mandrel means; and

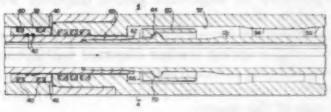
h. lateral ports extending through the mandrel means to communicate fluid between the longitudinal flow passage and the exterior of the mandrel means when the piston is in its second position.

4,284,153

HYDRAULIC DRILL STRING JAR

Luther G. Reaugh, Edmonton, Canada, assignor to OPI Ltd., Alberta, Canada

Filed Feb. 11, 1980, Ser. No. 120,354
Claims priority, application Canada, Feb. 20, 1979, 321882
Int. Cl.³ E21B *31/113*
U.S. Cl. 175—297 **8 Claims**



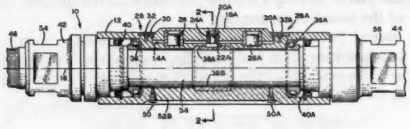
1. A hydraulic jar for use in a drill string including elongated telescopically-arranged mandrel and housing members relatively movable along the longitudinal axis of the jar between contracted and extended positions, said members respectively having a hammer and an anvil, said anvil being spaced from said hammer when said members are in a contracted position and arranged for contact when said members are in an extended position, hydraulic means in said jar for retarding movement of said mandrel member relative to said housing member between a contracted and extended position for a given time during a jarring stroke when the jar is tensioned, said hydraulic means including a chamber which in use is filled with fluid in said housing member with adjoining first and second bores, said first bore having a lesser diameter than said second bore, and a piston on said mandrel member receivable in said first bore, said piston having a slightly smaller diameter than said first bore to restrict the flow of fluid past said piston as it moves relative to said first bore during the jarring stroke until said piston exits from said first bore where-upon said members move rapidly to the relatively extended position so that the hammer delivers a blow to the anvil, the piston being of annular form and being positioned around the mandrel member for movement therealong between first and second axially spaced stops on said mandrel member, said piston having a first end adapted to cooperate with the first stop to permit free flow of the fluid between the piston and mandrel member as aid members move toward the contracted position, and the piston having a further portion adapted to co-operate with said second stop to provide sealing engagement therewith during movement of the piston through the first bore during the jarring stroke, one of said further portion and said second stop including a smooth annular wall portion which is sloped relative to the longitudinal axis of the jar while the other includes a smooth annular surface having a convexly arcuate contour as seen in a longitudinal section, with said annular wall portion and said annular convexly arcuate surface being relatively disposed to come into said sealing engagement during the jarring stroke, and wherein said further portion is located interiorly of said piston intermediate said first end thereof and the end of the piston opposite said first end.

4,284,154

NON-ROTATING SPRING LOADED STABILIZER

John R. England, Ontario, Canada, assignor to Inco Limited, Toronto, Canada

Filed Nov. 19, 1979, Ser. No. 95,318
Claims priority, application Canada, Jul. 19, 1979, 332121
Int. Cl.³ E21B 17/10
U.S. Cl. 175—325 10 Claims



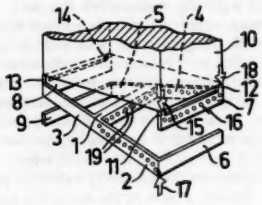
1. A self-centering, stabilizing apparatus comprising a fixed, non-rotating cylindrical sleeve, a mandrel rotatably disposed within the sleeve and detachably affixed therein, the sleeve having a longitudinal axis of symmetry, a plurality of bearing means disposed between the sleeve and the mandrel, a plurality of spaced, wear-resistant pads detachably affixed to the periphery of the sleeve, the pads oriented within a plurality of longitudinal channels formed along the peripheral surface of the sleeve, a plurality of alignment guides disposed within the channels and in slideable registry with the pads, a retainer projecting outwardly from each channel into a cavity formed within each pad, a spring washer disposed within each channel, the washer being oriented about the retainer, so as to allow the pads limited movement in a plane substantially perpendicular to the axis of the sleeve.

4,284,155

DEVICE FOR SUPPORTING THE LOAD OR A LOAD CARRIER IN AN ELECTROMECHANICAL SCALE

Arne O. Söderholm, Bromma, Sweden, assignor to S.E.G. Resistor AB, Vallingby, Sweden

Filed Nov. 13, 1979, Ser. No. 93,496
Claims priority, application Sweden, Nov. 15, 1978, 7811771
Int. Cl.³ G01G 3/10
U.S. Cl. 177—211 7 Claims



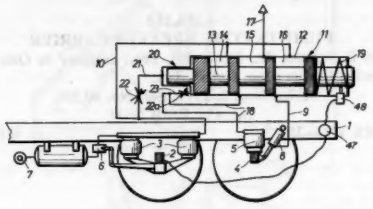
1. In an electromechanical scale of the kind in which a load to be weighed is supported on a bed by at least three load transferring points: a measuring body having a longitudinal axis and opposite ends; a pair of arms rigidly connected to the body at opposite ends of said body, each pair having first and second arms extending from opposite sides of the body and transverse to the body, the first arms of each pair extending from the same side of the body and the second arms of each pair extending from the other side of the body; means connected to the outer end of the first arm of one of said pairs for supporting said outer end on said bed; means connected to the outer end of the second arm of said one pair for partially supporting the load; means connected to the outer end of the second arm of the other pair for supporting said outer end on said bed; means connected to the outer end of the first arm of said other pair for partially supporting the load, the first and second arms of the pairs thereby functioning as levers capable of applying torque to the measuring body when a load is supported; and electric means for measuring the torsional strain or torsional deformation of said measuring body.

4,284,156

VEHICLE WITH AT LEAST THREE AXLES

Jes-Ernst Carstensen, and Walter Nau, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,820
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811874
Int. Cl.³ B62D 61/12
U.S. Cl. 180—24.02 9 Claims



1. An automatic control apparatus for a lifting device of a liftable axle of a double-axle unit of multiple axle vehicles, including also a non-liftable axle and which controls the lifting dependent upon axle loading, comprising in combination:

a frame having two of the axles combined in a double-axle unit yieldingly connected to said frame;

a lifting device for lifting and lowering the liftable axle of the double-axle unit;

a sensor for determining magnitude of load carried by the liftable axle in elevated and lowered positioning respectively separately emitting corresponding control values for the particular loading of both the liftable axle and the non-liftable axle, said sensor adding the total load of the double-axle unit collectively for purposes of emitting thereof; and

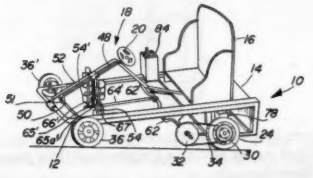
a control element for actuating said lifting device only in response to and dependent upon the total load control value emitted collectively from said sensor to eliminate oscillating pendulum action in lift positioning and to assure stable traveling behavior of the multiple axle vehicles.

4,284,157

VEHICLE FOR THE PHYSICALLY HANDICAPPED

Larry D. Lay, 26078 Alger, Madison Heights, Mich. 48071

Filed Dec. 1, 1978, Ser. No. 965,573
Int. Cl.³ B60K 1/00
U.S. Cl. 180—65 R 5 Claims



1. A vehicle for a physically handicapped person comprising:

a frame;

a plurality of ground engaging wheels mounted on said frame;

means for steerably controlling at least one of said plurality of wheels by a physically handicapped person;

means for driving said vehicle, said driving means including:

a source of power,

a motor connected to said source of power, and

means for drivingly connecting said motor to at least one of said plurality of wheels;

at least one rod having one end portion pivotally mounted to said frame for reciprocal movement;

a foot support mounted on the other end portion of said rod;

an orthopedic brace including:

a foot piece mounted on said foot support,

a calf support,

a vertical leg support interconnecting said foot piece and said calf support, and

means for connecting said vertical leg support to said rod proximate said calf support; and

means for drivingly interconnecting said drivingly connecting means and said rod whereby at least one leg of a physically handicapped person is exercised by reciprocal movement of said rod while said vehicle is being driven.

4,284,158

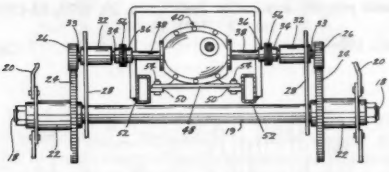
DETACHABLE DIFFERENTIAL FOR VEHICLE DRIVE TRAIN

Vern L. Schield, 418 Third Ave. NE., Waverly, Iowa 50677

Filed May 7, 1979, Ser. No. 36,383

Int. Cl.³ B60K *17/00*

U.S. Cl. 180—70 R **2 Claims**



1. A drive train for a vehicle having a frame supported on forward and rearward wheels, a power means on said frame, and a drive shaft driven rotatably by said power means, said drive train comprising:

a differential housing having an input shaft and two output shafts adapted to rotate in response to rotation of said input shaft,

first coupling means on said input shaft for detachably coupling said input shaft to said drive shaft,

a first and second connecting sprocket means on said output shafts of said differential housing,

a third and fourth rotatable sprocket member each positioned adjacent one of said first and second connecting sprocket means, respectively, and which rotate about an axis approximately coincident with the rotational axes of said first and second sprocket means; said third and fourth sprocket members being approximately the same size as said first and second sprocket means, the outer peripheral edges of said first and second sprocket means being adjacent and in registered alignment with the outer peripheral edges of said third and fourth sprocket members, respectively,

second and third coupling means each detachably coupling said first and second sprocket means to third and fourth sprocket members, respectively; said second and third coupling means each comprising a single chain trained over said registered pairs of first and third sprockets, and second and fourth sprockets; each said chain comprising a plurality of links joined into a continuous loop, one of said links being detachable to permit removal of said loop from said sprockets,

a mechanism interconnecting each of said third and fourth sprocket members to one of said rearward wheels for causing rotation of said rearward wheels in response to rotation of said third and fourth sprocket members,

said forward and rearward wheels being supported on axle means, said wheels and axle means bearing the weight of said vehicle,

a securing means detachably securing said differential housing to said frame at a location above and remote from the location of said axle means for said rearward wheels.

4,284,159

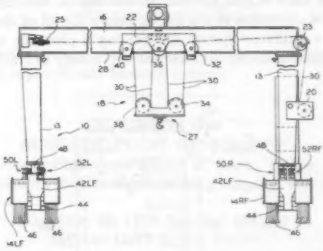
MOBILE CRANE

Richard F. Voelz, Butler, Wis., assignor to Renner Manufacturing, Milwaukee, Wis.

Filed Apr. 26, 1979, Ser. No. 33,739

Int. Cl.³ D62D *5/06*

U.S. Cl. 180—140 **25 Claims**



1. A mobile crane having spaced apart first and second front wheel means and spaced apart first and second rear wheel means which are also spaced from said front wheel means,

first and second steering means,

first and second coupling means for coupling said first and second steering means to said first and second front wheel means, respectively,

first and second connecting means each having a first mode for connecting said first and second steering means to a power source for turning said front wheels through a turning angle,

third and fourth steering means respectively associated with said first and second front wheel means and fifth and sixth steering means associated with said first and second rear wheels, respectively,

third and fourth coupling means for coupling said third and fourth steering means, respectively, to said first and second front wheel means and fifth and sixth coupling means for locking and unlocking said first and second rear wheel means, respectively, in a predetermined orientation, said fifth and sixth steering means are operable to turn the said rear wheel means through a turning angle when the same are unlocked,

said first and second connecting means having a second mode wherein said third, fourth, fifth and sixth steering means are coupled to said power source for simultaneously turning said front and rear wheel means through the same turning angles.

4,284,160

VEHICLE GUIDANCE SYSTEM EMPLOYING RADIO BLOCKING

Robert DeLiban, Menlo Park, and David G. Lieby, San Jose, both of Calif., assignors to Barrett Electronics Corporation, Northbrook, Ill.

Filed Mar. 19, 1979, Ser. No. 21,335

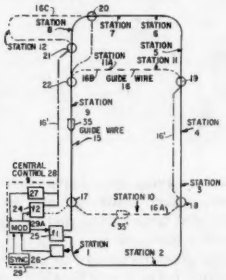
Int. Cl.³ B62D *1/24*

U.S. Cl. 180—168 **26 Claims**

1. In a guidance system for guiding a plurality of vehicles along a traffic layout divided into a plurality of traffic control

blocks, the combination comprising: identification means for each of said blocks which provide a unique identifying signal for each block; vehicle control means for each vehicle including heading means for directing the vehicle along the traffic layout, input means for receiving the identifying signal for a given block as the vehicle passes adjacent to its identification means, and means responsive to identifying signals received by said input means for generating position signals indicative of the location of the vehicle along the traffic layout, each of said vehicle control means including timing means operable when enabled to generate a plurality of timing signals which define a plurality of time channels, transmitter means, and enabling circuit means responsive to said timing signals and one of said position signal to enable said transmitter means to transmit a presence signal during at least one of said time channels indicative of a state of occupancy of a given block; and synchronizing means for periodically generating a synchronizing signal which is transmitted to the vehicles for enabling the timing means of each of said vehicle control means, thereby synchronizing the operation of the timing means for all of the vehicles.

8. In a guidance system for guiding a plurality of vehicles along a traffic layout divided into a plurality of traffic control



blocks, the combination comprising: identification means for each of said blocks which provide a unique identifying signal for each block; and vehicle control means for each vehicle including heading means for directing the vehicle along the traffic layout, input means for receiving the identifying signals for each block as the vehicle passes adjacent to the identification means for the blocks, means responsive to identifying signals received by said input means for generating position signals indicative of the location to the vehicle along the traffic layout, each position signal comprising a binary coded signal identifying the block in which the vehicle is located, timing means operable when enabled to generate a plurality of binary coded timing signals which define and identify a plurality of time channels, certain ones of said time channels being associated with different ones of said blocks, enabling means including a comparator circuit for comparing one of said position signals with said timing signals and for generating an enabling signal during at least one of said time channels, identified by a coded timing signal corresponding to said one position signal, and transmitter means responsive to said enabling signal to generate a presence signal representative of the location of the vehicle along the traffic layout.

4,284,161

SUSPENSION SYSTEM FOR SNOWMOBILES

Jaroslav Blass, Chaska, Minn., assignor to Kawasaki Motors Corp., U.S.A., Santa Ana, Calif.

Filed Nov. 24, 1978, Ser. No. 963,913
Int. Cl.³ B62M *9/16*
U.S. Cl. 180—184 **15 Claims**

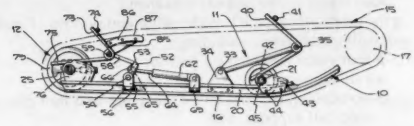
1. In a suspension system for a track driven vehicle including a vehicle body, the combination of:

a rigid chassis means;

suspension means interconnecting said vehicle body and said chassis means, said suspension means including

a front support frame pivotally connected to said chassis means and to said body, said front support frame including a front transverse member having an axis;

a front torsion spring having a coil about said axis carried at each end of said transverse member,



each torsion spring having a spring arm extending from said coil;

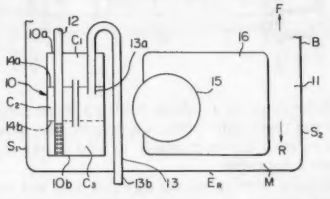
and cam means on the chassis means in operable contact with said spring arm whereby movement of said body and front transverse member relative to said chassis means changes the operable contact of said arm with the cam means and varies the response of said torsion spring to such movement.

4,284,162

EXHAUST SYSTEM OF AUTOMOTIVE VEHICLE

Takashi Ishida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 11, 1979, Ser. No. 56,617
Claims priority, application Japan, Sep. 20, 1978, 53-127933
Int. Cl.³ B60K *13/04*
U.S. Cl. 180—296 **7 Claims**



1. An automotive vehicle having a vehicle body, comprising:

a muffler disposed beneath the vehicle body to attenuate exhaust noise, said muffler being formed with a front end face facing toward the front of the vehicle and a rear end face facing toward the rear of the vehicle, the longitudinal axis of said muffler being parallel with the longitudinal axis of the vehicle body, said muffler having therein first and second partition walls, said first partition wall being located nearer to the front end face than the second partition wall, a front resonance chamber being defined by the first partition wall, an expansion chamber being defined between the first and second partition walls, a rear expansion chamber being defined by the second partition wall said second partition wall being provided with passage means interconnecting said expansion chambers, and conduit means for connecting said front resonance chamber to said rear expansion chamber;

an exhaust pipe for introducing therethrough exhaust gases into said muffler, inserted into said muffler through the front end face of said muffler, an end portion of said exhaust pipe opening to the rear chamber of said muffler;

a tail pipe for discharging therethrough the exhaust gases out of said muffler, having a first end portion inserted through the front end face into said muffler and opening to the expansion chamber of said muffler, a curved portion integrally connected with the first end portion through a first

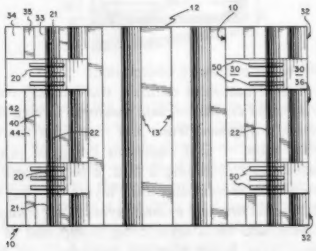
straight portion which is located within the front chamber and parallel with the longitudinal axis of said muffler, and a second end portion located rearward of the rear end face of said muffler, the second end portion being integrally connected with the curved portion through a second straight portion parallel with the first straight portion, the second end portion being formed with an exhaust gas outlet through which the exhaust gases are discharged into the atmosphere.

4,284,163

COUPLING MEANS FOR HORIZONTAL VIBRATOR WITH TOOTH-LIKE PROJECTIONS

William C. Pritchett, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1979, Ser. No. 108,205
Int. Cl.³ G01V *1/053*
U.S. Cl. 181—113 **4 Claims**



1. In a transducer for inducing shear waves in an elastic medium, including a horizontally movable support means adapted to couple energy of such transducer into said medium, the improvement comprising a plurality of cleat means of differing depth on such support structure for engaging the surface of said medium, each of said cleat means consisting of a downwardly convergent, wedge-shaped structure adapted to form a horizontal bottom cleat edge extending transversely to the direction of transducer motion, and a plurality of tooth-like projections affixed respectively to at least some of said cleat means so as to extend downwardly from the deepest of said cleat edges, the total load-bearing surface of said tooth-like projections being very small relative to that of said cleat means.

4,284,164

ACOUSTIC PULSE GENERATOR

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 21, 1979, Ser. No. 107,009
Int. Cl.³ G01V *1/137, 1/047*
U.S. Cl. 181—117 **6 Claims**

1. Apparatus for generating an acoustic pulse in a medium comprising

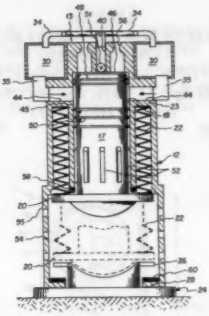
(a) a hollow cylindrical housing having a closed top and open bottom and adapted to be supported in an upstanding position, the sidewall of said housing being penetrated adjacent said closed top by one or more ports,

(b) an impact piston movable within said housing

(c) means for supporting said impact piston so as to block said ports

(d) a source of compressed gas interconnected with said ports

(e) means acting in opposition to said support means for effecting an initial downward displacement of said impact piston sufficient to clear said ports, thereby releasing said compressed gas within said housing to drive said impact



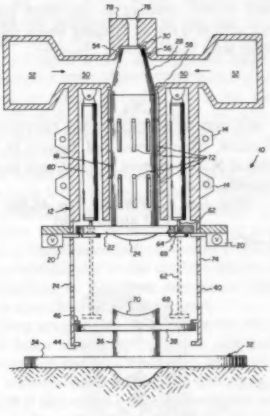
piston downwardly to deliver a blow to a target positioned adjacent said housing bottom.

4,284,165

ACOUSTIC PULSE GENERATOR

Tom P. Airhart, Plano, and Henry R. Barta, Dallas, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1979, Ser. No. 108,106
Int. Cl.³ G01V *1/133, 1/147*
U.S. Cl. 181—119 **7 Claims**



1. An acoustic pulse generator ccomprising:

(a) a hollow cylindrical housing having a closed top and open bottom and adapted to be supported in an upright position, the sidewall of said housing adjacent said closed top being penetrated by a one or more ports,

(b) means for interconnecting said ports with a source of compressed gas,

(c) an impact piston slidably interfitted within the bore of said housing, the wall of said piston having an upwardly and inwardly tapered portion end,

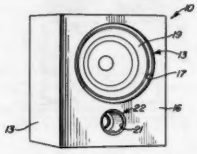
(d) means for supporting said piston in a ready position so that said ports are covered by said tapered portion of said piston,

(e) means mounted on the wall of said bore adapted to be sealingly engaged by the tapered portion of said piston in said ready position to prevent said compressed gas from entering said bore,

(f) means for removing said support means, whereby said

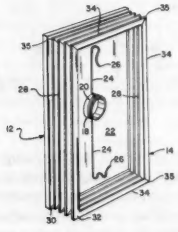
piston is driven downwardly and adapted to strike a target positioned adjacent the lower end of said housing.

4,284,166
PORT DEVICES FOR BASS-REFLEX SPEAKER ENCLOSURES
George A. Gale, 7127 S. Ellis Ave., Chicago, Ill. 60619
Filed Apr. 13, 1979, Ser. No. 29,724
Int. Cl.³ H05K 5/00
U.S. Cl. 181—156 12 Claims



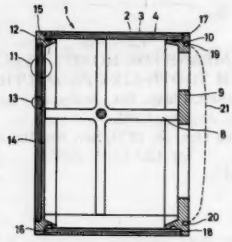
1. A port device for a hollow, bass-reflex speaker enclosure, said speaker enclosure comprising a first wall portion having a speaker opening therein and a speaker mounted behind said speaker opening, a second wall portion having a port opening therein, and third wall portions which wall portions define an acoustic chamber wherein the air within that chamber transmits energy from the speaker to the port, said port device comprising: a hollow structure having a mouth opening at one end thereof and having a smaller throat opening at an opposite end thereof, said port device being mounted within said enclosure with said mouth opening at said port opening of said enclosure and with said throat opening inside said enclosure in communication with said acoustic chamber.

4,284,167
SOUND REPRODUCING DEVICE
Ronald R. Kozlow, Morristown, and Donald D. Grieg, North Bergan, both of N.J., assignors to Electronic Research Assoc., Inc., Moonachie, N.J.
Filed Jun. 4, 1979, Ser. No. 44,869
Int. Cl.³ H04R 7/20
U.S. Cl. 181—172 18 Claims



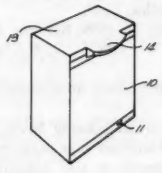
1. A sound reproducing device comprising:
a housing;
an acoustic diaphragm;
support means for supporting said acoustic diaphragm for substantially free longitudinal movement relative to said housing while maintaining said acoustic diaphragm in a predetermined lateral position relative to said housing, said support means comprising corrugated compliant coupling means having a lateral cross-sectional shape which is noncircular; and
drive means for providing relative longitudinal movement between said acoustic diaphragm and said housing.

4,284,168
LOUDSPEAKER ENCLOSURE
Harry Gaus, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Aug. 23, 1978, Ser. No. 936,105
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738295
Int. Cl.³ H05K 5/00; E04B 1/82
U.S. Cl. 181—199 22 Claims



1. A loudspeaker enclosure comprising:
a casement, said casement defining the internal volume of the loudspeaker enclosure, said casement having openings at oppositely disposed front and rear sides thereof, the remaining sides of said casement being of multi-layer construction and including a first, a second and a third layer, said first, second and third layers forming a multi-layer sheet, said first and second layers being comprised of sheet metal, said third layer being comprised of plastic, said third layer being disposed between said first and second layers, said multi-layer sheet having been formed into a generally rectangular cuboid shape, said multi-layer sheet further being bent inwardly toward the center of said casement and terminating in a pair of securement ends, the securement ends being aligned in face to face relation, said casement further including means for locking said securement ends;
front panel means for sealing said casement front opening; and
rear panel means for sealing said casement rear opening.

4,284,169
BUBBLE NOISE REDUCTION
Gavin E. Tulloch, Sydney, Australia, assignor to Plessey Australia Pty. Limited, Villawood, Australia
Filed Aug. 22, 1978, Ser. No. 935,777
Int. Cl.³ F01N 7/12
U.S. Cl. 181—211 27 Claims



1. A method for reducing noise generated by a gas emanating from a device submerged in a liquid having an upper gas interface, comprising the steps of:
issuing gas from said device through an orifice disposed thereon and onto a surface disposed immediately adjacent said orifice externally of said device and facing in a direction generally away from said upper gas interface; and

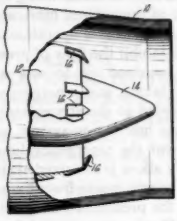
forming a plurality of discrete bubbles on said surface from said issued gases.

4,284,170

GAS TURBINE NOISE SUPPRESSOR

Richard S. Larson, Rocky Hill, and Allan B. Packman, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 22, 1979, Ser. No. 87,188
Int. Cl.[3] F02K *1/00*
U.S. Cl. 181—213 **3 Claims**



1. Means for reducing spurious noise in a tail pipe in a turbo fan engine having concentric pipes defining coannular flow passages for the fan air and the engine core gases and where the outer pipe extends downstream of the inner pipe and where the flow egressing from the inner pipe forms a helical unsteady pressure field impacting the outer pipe at some distance downstream thereof, said means comprising a plurality of tab-like elements having a projection extending radially inwardly at the discharge end of the inner pipe for destroying the coherence of the unsteady pressure field and said tab-like elements being circumferentially and asymmetrically located about the inner pipe.

4,284,171

CONVERTIBLE LADDER

Graham Owen, 7 Owen Ave., Kyeemagh, Sydney, New South Wales, Australia

Filed Feb. 12, 1979, Ser. No. 11,424
Int. Cl.[3] E04G *1/30;* E06C *1/32*
U.S. Cl. 182—22 **5 Claims**

1. A convertible ladder comprising two leg assemblies each comprising a pair of sides joined by a plurality of rungs, pairs of regularly spaced hooks on each leg assembly the length thereof, a plank member including end lugs engaging in a pair of hooks on each leg assembly, said plank member further including arms provided with lugs engaging in another pair of hooks on each leg assembly, a pair of bridging members respectively pivotally mounted on the sides of one leg assembly at the upper end thereof, each bridging member having a slot at each end thereof, pins on corresponding upper end parts of each side engaging in said slots, catch members pivotally mounted on said bridging members so as to overlie the slots in said bridging members and fit over said pins to prevent the bridging means slots from disengagement from said pins.

4,284,172

ADJUSTABLE LADDER EXTENDER ASSEMBLY SAFETY ATTACHMENT

Solomon Cohen, 2435-B Tremont St., Philadelphia, Pa. 19115

Filed Jul. 6, 1979, Ser. No. 55,492
Int. Cl.[3] E06C *7/44, 7/48*
U.S. Cl. 182—204 **1 Claim**

1. An adjustable ladder extender assembly safety attachment (ALEASA), including

A. A bracket of a channel shaped member having three walls and an open side with a diverging member protruding from the wall opposite and extending away from the open side wherein the diverging member is multi-sided, but preferably an eight-sided prism shaped solid member whose sides are perpendicular to the side to which it is secured and has a hole through the member that is exposed on two sides which are opposite each other, and which are on the same plane as the walls of the channel-shaped member which are adjacent to the open side and holes in both walls adjacent to the open side are dimensioned and positioned to allow for securing the device to a ladder or the like;

B. A hollow member having several walls, but preferably four walls with a diverging member protruding from one wall and protruding away from its opposite wall wherein the diverging member is multi-sided, but preferably an eight-sided prism-shaped hollow member whose sides and walls are perpendicular to the wall on which it is secured and dimensioned to envelope and house the diverging member as described in A above; and

C. A bar having several sides, but preferably four sides with a series of holes eminating from one side and each hole being exposed on both the eminating side and its opposite side; and wherein each side of the diverging member as described in B above has a hole dimensioned and designed to allow a bolt or the like to be placed through any two opposite sides of the diverging member and, when so positioned, through the hole in the diverging member as described in A above; and wherein holes are dimensioned and positioned in two opposite walls of the hollow member as described in B above and eminate from the wall on which the diverging member is secured to allow a bar as described in C above to be held in place within the hollow member when said bar is passed through said hollow member and bolts or the like are put through opposing holes in opposite walls of said hollow member, and when so positioned, through designated holes in said bar and wherein the bracket, the hollow member and the bar, as described in A, B and C above, respectively, form the ALEASA, which can be attached to a ladder or the like and adjusted so that said ladder may be placed in any desired position; and wherein the ALEASA may be made of any suitable material; and wherein the ALEASA may be made in various sizes and shapes; and wherein the

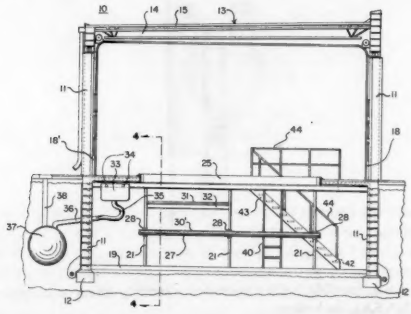
ALEASA may be modified to accommodate other objects, designs, and purposes, which may become apparent to those skilled in the art from this disclosure.

4,284,173

MOTOR VEHICLE LUBRICATING FACILITY

Paul C. Patterson, St. Albans, W. Va., assignor to Pennzoil Company, Pittsburgh, Pa.

Filed Nov. 13, 1979, Ser. No. 93,750
Int. Cl.³ F16C 3/14
U.S. Cl. 184—1.5 **7 Claims**



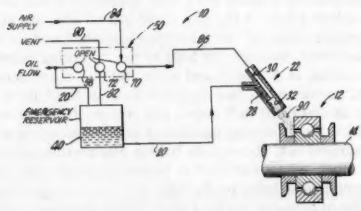
1. A motor vehicle lubricating facility comprising a building structure having a plurality of superposed floors, one of said floors having a substantially rectangular opening therein over which an automobile may be driven in straddling relation thereto, a platform generally conforming in area to that of said rectangular opening, a plurality of supporting columns extending between said floors, a pair of horizontal channels disposed in opposed parallel spaced relation supporting opposite edges of said platform and means for attaching said channels to said columns at different levels whereby to support said platform adjustably at different levels beneath said opening on which a workman may stand to perform lubricating functions on an automobile, standing over said opening, from beneath the automobile.

4,284,174

EMERGENCY OIL/MIST SYSTEM

Frank Salvana, Fairfield, and Arnold Junker, Bridgeport, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Apr. 18, 1979, Ser. No. 31,045
Int. Cl.³ F01M 1/18
U.S. Cl. 184—6.4 **8 Claims**



1. An emergency lubricant/mist system for providing a pressurized spray of lubricant to a lubricated part for a limited period of time after failure of a main lubrication system comprising:

a source of pressurized lubricant;

air aspirating nozzle means directed to provide either a stream of lubricant or a spray of lubricant to the lubricated part;

conduit means interconnecting said source of pressurized lubricant to said nozzle means;

an emergency lubricant reservoir provided in said conduit means intermediate said source of pressurized lubricant and said nozzle means;

atmospheric vent means;

a source of pressurized air;

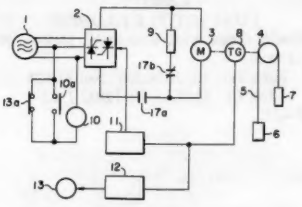
control means interconnecting: (1) said atmospheric vent means with said emergency lubricant reservoir; and (2) said source of pressurized air with said air aspirating nozzle means; said control means being operatively connected to said source of pressurized lubricant whereby when the main lubrication system is operational, said control means is operative to inhibit the flow of pressurized air from said source of pressurized air to said air aspirating nozzle means and to inhibit said emergency lubricant reservoir from being vented to the atmosphere, whereas upon failure of the main lubrication system, said control means is effective to vent the emergency lubricant reservoir and simultaneously allow pressurized air to be provided to the air aspiration nozzle means from the source of pressurized air, such that the pressurized air passing through the nozzle means is effective to aspirate lubricant from the emergency lubricant reservoir to create a pressurized spray of lubricant to said lubricated part.

4,284,175

EMERGENCY STOP APPARATUS FOR ELECTRIC ELEVATORS

Toshiaki Ishii, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 808,612, Jun. 21, 1977, abandoned.
This application Jun. 27, 1979, Ser. No. 52,589
Claims priority, application Japan, Jul. 5, 1976, 51-79694
Int. Cl.³ B66B 5/02
U.S. Cl. 187—29 R **2 Claims**



1. An emergency stop apparatus for electric elevators comprising:

a D.C. motor for driving a cage with passengers;

variable D.C. power source means powered by an A.C. power source and coupled to said motor for controllingly driving said motor;

means for coupling the D.C. power source means to the motor;

a power stoppage memorizing circuit for detecting a power stoppage of the A.C. power source and memorizing the power stoppage;

first means for monitoring an elevator system safety function to verify a predetermined performance of said system function;

second means coupled to said first means for stopping said motor when said first means senses a malfunction;

first motor stopping means for stopping said motor to stop the cage when said power stoppage memorizing circuit detects a power stoppage;

a memory erasing circuit for automatically erasing the memory of said memorizing circuit after the cage stops when

A.C. power is restored and if no safety malfunction is sensed by said first means; and

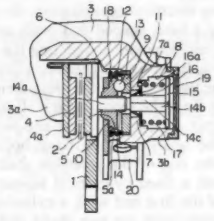
means for issuing a start command through operation from an advance floor button in the cage by the passengers themselves or a floor button after the operation of said memory erasing circuit to release said motor stopping means to permit the cage to restart its travel.

4,284,176

MECHANICALLY OPERATED DISC BRAKE

Tetsuo Haraikawa, Funabashi, and Koichi Tamura, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Aug. 20, 1979, Ser. No. 68,106
Claims priority, application Japan, Aug. 19, 1978, 53-101130; Aug. 19, 1978, 53-101132
Int. Cl.³ F16D *65/38*
U.S. Cl. 188—71.7 **8 Claims**



1. A mechanically operated disc brake comprising:

a supporting member;

a caliper slidably supported on said supporting member for sliding movement parallel to the axial direction of a disc to be braked and straddling a peripheral portion of the disc and having limbs extending along opposite sides of the disc;

a first friction pad engaged by one of said limbs for being urged against one surface of the disc by said one limb;

a second friction pad opposed to the first friction pad on the other side of the disc;

the other limb of said caliper having a cavity therein, said cavity having an inner cavity facing toward said friction pads and an outer cavity facing away from said friction pads and an annular wall having an aperture therethrough partitioning the outer cavity from the inner cavity;

a nut member rotatably mounted in the inner cavity and having means for applying thereto a rotational input force;

means in said inner cavity engaged with said nut member for converting rotational movement of the nut member into axial movement thereof;

a rod member on which said nut member is threaded and having an inner end abutting the second friction pad for urging said second friction pad against the disc and an outer end extending through the opening in said annular wall into said outer cavity;

a spring retainer on said outer end of said rod member;

a spring extending between said annular wall and said spring retainer; and

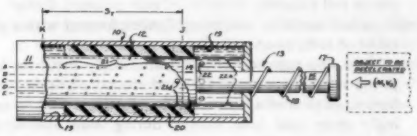
a rotation control member fixed in said outer cavity contiguous to said annular wall and non-rotatably fixed therein and having at least one leg portion engaging the outer peripheral surface of said rod member for restricting the rotation thereof.

4,284,177

SELF-ADJUSTING SHOCK ABSORBER HAVING STAGED METERING

John A. Domek, Wheaton, Ill., assignor to Efdyn Corporation, Geneva, Ill.

Filed May 14, 1979, Ser. No. 38,932
Int. Cl.³ F16F *9/48*
U.S. Cl. 188—280 **16 Claims**



1. A shock absorber for decelerating impacting loads, said shock absorber being of the type comprising a closed hydraulic cylinder, a piston in said cylinder having a predetermined stroke from an initial position to a final position therein, and fluid passageway means for discharging fluid from the portion of the cylinder ahead of the piston as the piston moves away from its initial position in response to an impacting load, said passageway means having means for controlling the fluid discharge rate as a function of piston displacement from said initial position, wherein the improvement comprises:

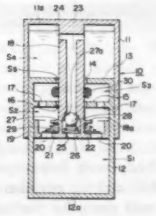
said controlling means providing a progressively diminishing fluid discharge rate as a function of said piston displacement as said piston traverses a predefined portion of its stroke, defining a control region, to approximate a predetermined deceleration profile for one nominal design mass system, and providing a progressively diminishing fluid discharge rate as a function of said piston displacement as said piston traverses another predefined portion of its stroke, defining another control region, to approximate a predetermined deceleration profile for another nominal design mass system characterized at its point of impact, and thereafter in the case of an applied propelling force, as different from said one mass system in that its mass, velocity and propelling force defining an equivalent mass system is substantially different from that of said one mass system at its point of impact.

4,284,178

HYDRAULIC SHOCK ABSORBER

Takao Tomita, Niiza, and Masao Hiruma, Kawajima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,344
Claims priority, application Japan, Aug. 11, 1978, 53-97860
Int. Cl.³ F16F *9/34, 9/36*
U.S. Cl. 188—281 **16 Claims**



1. A hydraulic shock absorber comprising:

telescopically-connected inner and outer cylinders;

a first one of said cylinders including a piston rod extending coaxially therewith from a closed end wall of said first cylinder and provided with a piston thereon;

a second one of said cylinders including a closed end wall at one end thereof and a first radial partition wall adjacent the other end of said second cylinder formed with a hole through which said piston rod extends and dividing an enclosed space defined by said inner and outer cylinders; said piston being located in said second cylinder;

said second cylinder further including a second radial partition wall extending between said first partition wall and said piston and formed with a hole through which said piston rod extends;

said second partition wall being further formed with a plurality of radially-spaced oil path apertures;

an elastic ring member closely and slidably fitted on said piston rod between said first and second partition members so as to abut against said first partition wall to sealingly close said hole therein during extension stroke movement of said piston rod and to abut against said second partition wall to sealingly close said hole therein during compression stroke movement of said piston rod, such that said elastic ring member, when in abutting engagement with either of said partition walls, can be forced to slide along said piston rod in relation to further movement of said piston rod;

said piston rod being provided therethrough with an axial oil path providing communication between a chamber defined by said first cylinder between said end wall of said first cylinder and said first partition wall and a chamber defined by said second cylinder between said end wall of said second cylinder and said piston; and

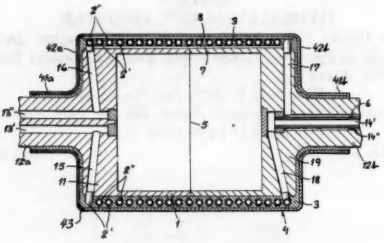
a check valve provided within said axial oil path, said check valve being adapted to open said axial oil path during the extension stroke of said hydraulic shock absorber.

4,284,179

ROLLER ELECTRODE AND PROCESS FOR MAKING SAME

Harald Albrecht, and Roland Schnettler, both of Schwerte; Fed. Rep. of Germany, assignors to Maschinen- und Werkzeugbau GmbH, Dortmund-Hombruch, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 36,995
Int. Cl.³ C25D *17/06*
U.S. Cl. 191—1 A **9 Claims**



1. A roller electrode for the support of sheet-metal strips to be electrolytically treated, comprising:

a hollow cylindrical body;

a thin-walled cylindrical shell of hard metal coaxially surrounding said body with formation of an annular space between said shell and the periphery of said body;

tubing lodged in said space for the circulation of a cooling fluid therethrough, said tubing being separated by spacers from said periphery and said shell; and

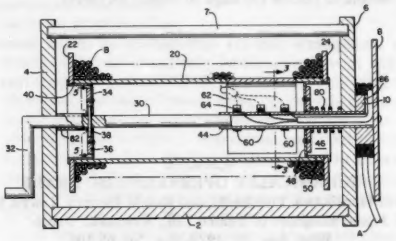
a filler in said space consisting of a metallic mass of good electrical conductivity and of lower melting point than said hard metal and the material of said body, said tubing being embedded in said mass.

4,284,180

PORTABLE REEL FOR POWER LINES

Joseph Masters, 21124 Alexander, St. Clair Shores, Mich. 48081

Filed Jan. 21, 1980, Ser. No. 113,675
Int. Cl.³ H02G *11/00*
U.S. Cl. 191—12.2 R **1 Claim**



1. A portable device for storing a short electrical cord and a longer electrical cord, which is constructed and operable to have one or the other of the cords connected to a fixed source of electrical energy and the other to be connected to a remote device requiring electrical energization, the device comprising a frame having a base, spaced end walls extending upwardly from the base, and a handle connecting the upper parts of the end walls, a fixed hollow shaft extending from a first one of the end walls of the frame toward the second end wall, a rotatable shaft extending from the second end wall toward the first end wall with its end adjacent the first end wall being rotatably journaled in the interior of the fixed hollow shaft, a crank connected to the end of the rotatable shaft externally of the second end wall, a fixed cylindrical support mounted on the external side of the first end wall, a cylindrical reel surrounding and concentric with the two shafts and overlapping both shafts, the reel being connected at its one end to the rotatable shaft and at its other end being rotatably mounted on the fixed shaft, a plurality of annular slip rings mounted in spaced axial relation on the fixed shaft, a plurality of brushes mounted on the reel internally thereof and having parts in sliding engagement with the slip rings, a short electrical cord mounted in wound relation on the fixed support, and having within it a plurality of electrical conductors each of which is connected through the hollow shaft to one of the slip rings, and a longer cord wound on the reel and also having within it a plurality of electrical conductors each of which is connected through the reel to one of the brushes.

4,284,181

RIGID TROLLEY RAIL AND METHOD FOR LAYING THE SAME

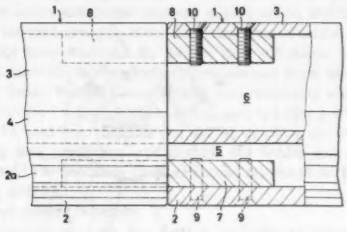
Masamoto Shuto, Tokyo, Japan, assignor to Japan Air Line Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1979, Ser. No. 67,761
Claims priority, application Japan, Aug. 17, 1978, 53-100187
Int. Cl.³ B60M *1/00*
U.S. Cl. 191—22 DM **2 Claims**

1. A trolley rail structure comprising:

a plurality of aluminum rail bodies each having a cross-sectional shape with a hollow box-like base portion having upwardly and inwardly slanting surfaces on the upper portion thereof and a protruding middle part extending upwardly from the middle of the upper side of said base portion between the upper ends of said slanting surfaces and having a hollow rectangular cross-section with substantially vertical side surfaces, and a pair of clamping strips projecting upwardly from the upper side of said base portion at the lower ends of said slanting surfaces; said aluminum rail being in end to end abutment in the direction of the rail and having connecting means in the hollows of said rail bodies connecting the bodies to each

other; and a thin strip of stainless steel extending along the upper surfaces of the protruding middle parts of successive rails and having the edge portions thereof bent downwardly against the vertical side surfaces of said middle



parts and against the slanting surfaces of said base parts, and said clamping strips being bent inwardly toward said middle parts and against the lower edges of said strip lying against said slanting surfaces for clamping said lower edges against said slanting surfaces.

4,284,182

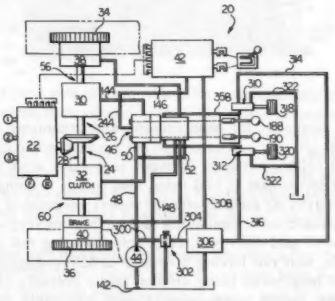
VEHICLE STEERING BRAKE AND CLUTCH CONTROL

Gary A. Hakes, North Brunswick, N.J.; Norma G. Shook, Morton; George W. Cackley, Hanna City, both of Ill.; Stephen D. Burdette, Edina, Minn., and Hugh C. Morris, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 876,581, Feb. 9, 1978. This application Apr. 13, 1979, Ser. No. 29,790

Int. Cl.[3] B60K *41/20*

U.S. Cl. 192—4 A **1 Claim**



1. In a vehicle in which driving force is applied to both sides thereof, including brake systems associated respectively with both sides thereof and responsive to fluid pressure from a source thereof, each brake system associated with a side of the vehicle comprising brake means actuatable to brake that side of the vehicle and releasable to release that side of the vehicle, a control apparatus for each brake apparatus comprising:

valve means comprising a valve body and a valving spool movably disposed in a bore defined by the valve body;

means for providing fluid communication between said source and said valve body bore;

means for providing fluid communication between said valve body bore and said brake means;

means for providing fluid communication from said valve body bore and through which pressure may be released from said valve body bore;

the valving spool being movable within said bore to first and second positions relative to said valve body, the valving spool in one of said first and second positions providing communication of fluid pressure from said source through said means for providing fluid communication between said source and said valve body bore, through said means for providing fluid communication between said valve body bore and said brake means to said brake means, the valving spool in the other of said first and second positions allowing release of fluid pressure from said brake means through said means for providing fluid communication between said valve body bore and said brake means, and said means for providing fluid communication through which pressure may be released; and

actuator means operatively coupled with said valving spool so that movement of said actuator means in one direction provides movement of the valving spool to its first position, and movement of the actuator means in another direction provides movement of said valving spool to its second postion,

wherein the brake means are applied upon release of fluid pressure therefrom, and released upon application of fluid pressure thereto, and further comprising vehicle transmission means operable upon supply of fluid pressure thereto, and wherein said means for providing fluid communication between said source and said valve body bore comprise priority valve means for providing fluid to said valve means and said transmission means and for providing that a certain level of fluid pressure is supplied to the brake means to provide a disengagement thereof prior to fluid pressure being supplied to said transmission.

4,284,183

AUTOMATIC CLUTCH DEVICE

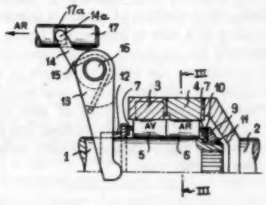
Roger Brisabois, Clamart, and Gerard Brut, Le Mesnil le Roi, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 6, 1979, Ser. No. 46,086

Claims priority, application France, Jun. 7, 1978, 78 17023

Int. Cl.[3] F16D *41/08;* **B60K** *17/34*

U.S. Cl. 192—48.92 **12 Claims**



1. A coupling or torque transfer device between an input shaft and an output shaft, characterized in that the device is automatic, functioning when the speed differences, resulting from the mechanical structure, between the input shaft and the output shaft reaches a certain value, the device functioning in both directions of rotation and having selection means for determining the direction of rotation, said device comprising:

a double ring connected to one said shaft and encircling the other said shaft and providing a pair of identical series of interior wedging slopes,

two identical arrays of a series of rollers, said rollers mounted respectively between said double ring and the encircled said shaft,

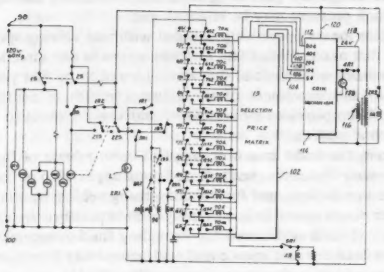
loading means for said arrays of rollers functioning for both directions of rotation and acting on one of the arrays of rollers in one direction of rotation and acting on the other of the arrays of rollers in the other direction of rotation, and control means connected to said selection means for actuating said loading means.

4,284,184

COIN MECHANISM TO MERCHANDISING MACHINE INTERFACE

David Hoffman, Hillsdale, N.J., assignor to Rowe International, Inc., Whippany, N.J.

Filed Dec. 3, 1979, Ser. No. 98,772
Int. Cl.³ G07F *11/00*
U.S. Cl. 194—2 **8 Claims**



1. A merchandising machine control circuit for selectively connecting one of a plurality of energizable elements to a first source of voltage of a first magnitude in response to energization of a relay winding from a second voltage source of a second magnitude including in combination, a coin mechanism having an interrogating signal output and a credit accumulator and a plurality of price lines, a plurality of manually operable selection switches each having a first pole associated with a first normally open contact and with a first normally closed contact and a second pole associated with a second normally open contact and with a second normally closed contact, a selection price matrix selectively connecting said first normally open contacts to said price lines, means for applying said interrogating signal to said first poles, means connecting said second normally open contacts respectively to first terminals of said energizable members and means connecting said second poles to one terminal of said first voltage source, said coin mechanism being responsive to actuation of a selection switch the first normally open contact of which is connected to price lines corresponding to a sum at least equal to the credit stored in said accumulator for applying said second voltage to said relay winding to connect the other terminals of said elements to the other terminal of said first source, said selection switches being connected in series with each of said first normally closed contacts connected to the succeeding first pole and with each of the second normally closed contacts being connected to the succeeding second pole.

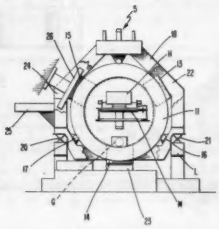
4,284,185

APPARATUS FOR PRODUCING ELECTRICAL BATTERIES

Anders Borjesson, Alvangen, Sweden, assignor to Aktiebolaget Tudor, Sundbyberg, Sweden

Division of Ser. No. 805,584, Jun. 10, 1977, Pat. No. 4,184,582.
This application May 14, 1979, Ser. No. 38,426
The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.
Int. Cl.³ B23P *19/00*; B65G *23/00*
U.S. Cl. 198—339 **2 Claims**

1. In an apparatus for producing electrode sets for electrical accumulators having a plurality of electrode cells, by casting connector bars onto electrodes in each cell, said apparatus being of the type comprising a cylinder drum mounted for rotation about its longitudinal axis, a plurality of electrode-receiving cassettes mounted around the periphery of said cylinder drum, a plurality of work stations positioned adjacent said drum and spaced around the periphery thereof, the improvement wherein said cylinder drum axis is arranged substantially horizontally and comprises two end rings between which said cassettes are mounted to a peripheral surface of the drum, drive means engaging one of said end rings and rotating said drum alternately and intermittently in opposite directions to sequentially displace said cassettes relative to said work stations in a vertically oriented circular path of travel, said drive means rotating said drum such that the extent of each rotary movement of the drum in one direction is the same while being different from the extent of each rotary movement in the opposite direction.

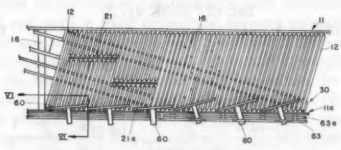


4,284,186

UNSCRAMBLING CONVEYOR

Gerald A. Brouwer, Grandville, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Jun. 18, 1979, Ser. No. 49,318
Int. Cl.³ B65G *47/24, 13/07*
U.S. Cl. 198—415 **13 Claims**



1. A conveyor for unscrambling and organizing randomly received articles, said conveyor having sides and a plurality of parallel rollers mounted between said sides with their axes skewed to the axis of said sides, said rollers forming an elongated conveying surface with the rollers upstream of the direction of article movement along said surface converging toward one side of said conveyor, an article engaging rail along said one side, said rail having a smooth article engaging surface; said rail lengthwise being divided into a plurality of separate segments; means independently and adjustably supporting each of said segments for variable angular relationship to said one side; said segments being individually movable laterally of said conveyor; means for locking each segment in a selected angular and lateral position; each of said segments being inclined at an angle to said one side with the upstream end thereof converging toward said one side, and at least some of said segments being inclined at an angle different from others of said segments.

4,284,187

AUTOMATIC PACKING LINE

Ulrich Kramer, Pully, and Alexis Chenevard, Morges, both of Switzerland, assignors to SAPAL, Societe Anonyme des Plieuses Automatiques, Ecublens, Switzerland

Filed May 22, 1979, Ser. No. 41,303
Claims priority, application Switzerland, Jun. 5, 1978, 6153/78
Int. Cl.³ B65G *47/68*
U.S. Cl. 198—435 **7 Claims**

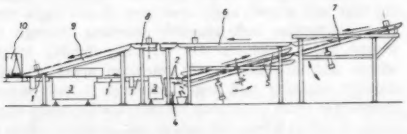
1. For an automatic packing line which includes a feeder

conveyor means arranged to bring a succession of articles which are to be packed, past a series of packing stations each served by a respective automatic feeder station, each of which is for removing at least some of the passing articles for packing at the respective packing station, so that downstream from the last of said automatic feeder stations in said series, the feeder conveyor means bears only such remaining ones of said articles as have not been removed by any of said automatic feeder stations; a recovery device located downstream from said last automatic feeder station for collecting said remaining articles; a storage device for temporarily storing said remaining articles collected by said recovery device; and an ejection device for evacuating said remaining articles from the feeder conveyor means should the recovery device become saturated with said remaining articles,

the improvement wherein:

said automatic packing line further includes an automatic recycling device for recycling to said feeder conveyor means, upstream of at least said last automatic feeder station but downstream of the furthest upstream one of said automatic feeder stations, said remaining articles temporarily stored by said storage device into vacant locations on said feeder conveyor means created by operation of said automatic feeder stations; there being a sufficient number of said automatic feeder stations normally to avoid saturation of the recovery device;

each of said recovery device, said storage device and said automatic recycling device including at least one endless belt for conveying said remaining articles thereon, and means for arranging in succession at least one said endless



belt of each said device; means for independently driving the endless belts of each said device when in said succession; and at least one article presence or absence-responsive sensor associated with each such driving means for controlling operation of each respective driving means;

the at least one endless belt of said recovery device comprising two endless belts mounted one above the other on a frame;

means movably mounting said frame between a first position wherein the upper one of said two endless belts is in succession with said ejection device and a said at least one endless belt of said temporary storage device is in succession with the lower one of said two endless belts and a second position wherein the lower one of said two endless belts is in succession with said ejection device and said one endless belt of said temporary storage device is in succession with the upper one of said two endless belts; and

said means for independently driving said two endless belts comprises means operable when said frame is in said first position for driving said upper belt intermittently forwards and for driving said lower belt continuously forwards and operable when said frame is in said second position for driving said upper belt continuously forwards and for driving said lower belt intermittently forwards, so that the one of said two endless belts which succeeds the ejection device may intermittently advance at a proper rate for accepting articles from the ejection device and the one of said two belts which is succeeded by said one endless belt of the temporary storage device may quickly unload articles onto said one endless belt of the temporary storage device.

4,284,188

APPARATUS FOR PROCESSING ARTICLES COMPRISING ELEVATOR MEANS FOR CONVEYING CARPET-FORMED CARRIERS IN THE VERTICAL DIRECTION

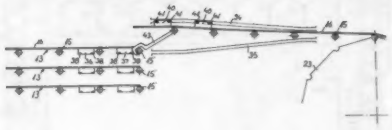
Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Jul. 5, 1978, Ser. No. 922,214

Claims priority, application Denmark, Jul. 14, 1977, 3204/77

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—472 **1 Claim**



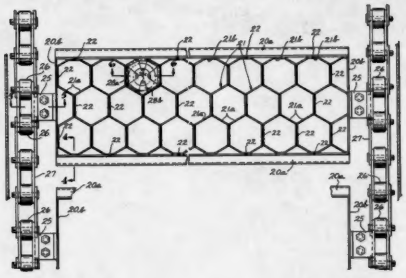
1. A conveying apparatus for continuously conveying articles through a processing environment, said apparatus comprising elevator means having vertically spaced supports continuously movable in the vertical direction, carpet-formed article carriers which are flexible in their longitudinal direction, said carriers being supportable on said supports, insert means for successively inserting said carriers on said supports at an insert position of said elevator means, withdrawal means for successively withdrawing said carriers from said supports at a withdrawal position of said elevator means, and means for conveying said carriers in a path from said withdrawal position back to said insert position, characterized in that said insert means comprise two pairs of insert slot guides arranged on either side of the path of the carriers, said slot guides having guiding slots open in the direction towards the path of said carriers, each of said carriers having a first set of transversely projecting engagement means at its leading end for positive engagement with the guiding slots of one of the insert slot guides of said pair, and a second set of transversely projecting engagement means for positive engagement with the guiding slot of the other one of the insert slot guides of each pair, said second set of engagement means being located, in the horizontal position of a carrier, at a level different from the level of said first set of engagement means, the inlet ends of the guiding slots of each pair of insert slot guides having a level difference equal to the level difference of said first and second engagement means, the outlet ends of the guiding slots of each pair of insert slot guides having a level difference equal to the level difference of the inlet ends plus the level difference of successive supports of said elevator means, the guiding slots thereby diverging in the direction of travel of said carriers, said withdrawal means comprising two pairs of withdrawal slot guides which are constructed inversely to said insert slot guides and thus having guiding slots converging in the direction of travel of said carriers, said carriers being provided at their leading and trailing ends with intercoupling means which are disengageable from carrier to carrier in response to the level difference between the trailing end of a carrier and the leading end of the next following carrier caused by the engagement of the engagement means at said ends in the guiding slots of one and the other respectively of each pair on insert slot guides, and are engageable by the levelling of said ends similarly caused by said withdrawal slot guides, the carriers thereby being intercoupled to form a belt capable of travelling as an independent entity from said withdrawal position to said insert position.

4,284,189

MULTIPLE BOTTLE CARRIER STRUCTURE

Michael Vamvakas, Rocky River, Ohio, assignor to Niagara Bottle Washer Manufacturing Co., a division of The Salangmack Company

Filed Jul. 2, 1979, Ser. No. 54,272
Int. Cl.³ B65G *17/32*
U.S. Cl. 198—647 **7 Claims**



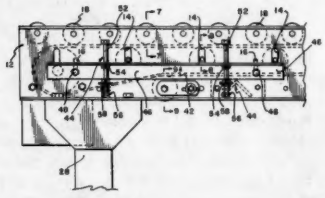
1. A carrier for transportation of a plurality of bottles, comprising a substantially rectangular frame having metal sides and ends and being longer than it is wide and having a height between about 3 and 4 inches, a honey-comb type structure substantially filling said frame, said structure including a plurality of tightly assembled rows of generally six-sided forms, the contacting sides of said forms with each other and with said frame being firmly and permanently attached, and means at each end of said frame to relate said carrier to a flexible conveyor, said forms being of metal and of a height to enclose a good portion of a wider generally cylindrical part of a bottom of a bottle, and a plastic liner in each form secured to said metal form and of a length to encompass said bottle.

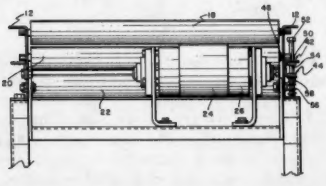
4,284,190

HORIZONTAL ACCUMULATING CONVEYOR

Fred S. Greenlee, III, 1970 S. West St., Wichita, Kans. 67213

Filed Jan. 28, 1980, Ser. No. 115,922
Int. Cl.³ B65G *13/07*
U.S. Cl. 198—783 **6 Claims**





1. A reversible accumulating conveyor comprising a pair of support members, each of said support members including a structure defining a plurality of pressure roller-resting apertures; a plurality of carrier rollers connected to the support members and rotatable with respect thereto; a plurality of pressure rollers vertically-slidably disposed within said pressure roller-resting apertures, said pressure roller-resting apertures being positioned lower with respect to the situs of said carrier rollers; support means attached to said support members for positioning said conveyor at a desired height from the floor; a conveyor belt reversible drive means mechanically communicating with the conveyor; an endless conveyor belt being driven by said drive means and being trained over and carried by said pressure rollers; at least one start belt integrally bound to said conveyor belt and having predetermined characteristics distinct with respect to said conveyor belt; and means for vertically urging the ends of said pressure rollers within said pressure roller-resting apertures in order to cause said endless belt to generally maintain a constant pressure against the carrier rollers, excepting when said start belt is carried by said pressure rollers, and to essentially constantly maintain a predetermined back pressure on said conveyor belt in either a forward or a reverse direction with respect thereto;

said means for urging comprises at least one pressure angle member supporting the ends of said pressure rollers, said angle member having a structure defining a plurality of angle apertures; a plurality of bolts vertically disposed within said angle aperture and including a structure having a means for resting the angle member whereupon the angle member rests; and spring-biased means surrounding said bolts to vertically urge said means for resting the angle member causing the the ends of the pressure rollers to be vertically biased and float, resulting in pressurizing the endless belt against the carrier rollers;

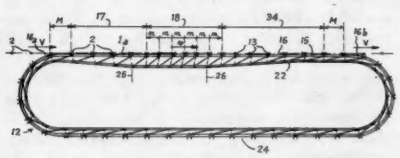
said angle members additionally include a structure defining a plurality of second angle apertures, said support members additionally having a structure including a plurality of elongated angle retention apertures capable of registering with said second angle apertures of said angle members, a retention bolt assembly inserting through said second angle apertures and vertically-slidably lodging within said elongated angle retention apertures while slidably retaining said angle members to said support members in order to provide for said floating effect of said pressure rollers when said ends of said pressure rollers are resting on said angle members being spring-biased.

4,284,191

ENDLESS CONVEYOR WITH LOCALLY VARYING SPEEDS

Rene C. Lavau, 22, rue de Verneuil, Paris, France (75007)

Filed Dec. 11, 1979, Ser. No. 102,307
Claims priority, application France, Dec. 13, 1978, 78 35106
Int. Cl.³ B66B *9/12*; B65G *23/14*
U.S. Cl. 198—792 **2 Claims**



1. An endless conveyor with locally varying speeds comprising: a linear endless assembly with a leading working side receiving the bodies to be transported, said assembly being composed of a succession of conveying elements, of variable spacings guided along a loop path; expanding-contracting means for varying the spacing of adjacent conveying elements over at least one controlled section of the path of the said linear assembly; and driving means for running the said linear assembly, wherein the said expanding-contracting means are distinct from the said endless linear assembly, and comprise at least a control device in a fixed position and formed by a succession of gripping elements guided over a loop path, of which a coinci-

dence section coincides with the said controlled section of the path followed by the elements of the said linear assembly, each gripping element being capable of gripping a conveying element at the upstream end of said coincidence section, and of releasing this conveying element at the downstream end of said coincidence section; each gripping element, being connected to one of the adjacent preceding gripping elements, by a connecting device controlling, in accordance with a pre-established program, the spacing between these two gripping elements as a function of the position of the said first-mentioned gripping element along said coincidence section, so that the said spacing decreases progressively in a first zone of the coincidence section and increases progressively in a second zone of the said section, situated downstream of the first zone.

4,284,192

CHAIN CONVEYORS HAVING MEANS FOR CONTROLLING CHAIN TENSION

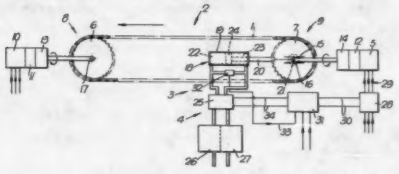
David B. Taylor, Worcester, England, assignor to Dowty Meco Limited, Worcester, England

Filed Nov. 20, 1979, Ser. No. 95,938

Claims priority, application United Kingdom, Nov. 21, 1978, 45483/78

Int. Cl.³ B65G *23/44*

U.S. Cl. 198—813 **8 Claims**



1. A chain conveyor including a driving sprocket, an electric motor arranged to drive that sprocket, another sprocket spaced from said driving sprocket, an endless chain extending between and meshing with the two sprockets so as to form upper and lower chain runs, a fluid-pressure-operable device which is so connected to said driving sprocket, and the driving sprocket being so adjustably mounted, that said device is capable of altering the distance between the driving sprocket and said other sprocket to effect adjustment in the tension of the chain, and a servo-system, of which said fluid-pressure-operable device forms a part, which includes an electrically-operable servo-device for controlling said fluid-pressure-operable device, feedback means connected between said fluid-pressure-operable device and the input side of said servo-system, and means for applying to said servo-device an electrical signal which is dependent upon the torque, at any instant, of said electric motor whereby the load on the motor is, during operation of the conveyor, continuously monitored and, in response to said signal, said servo-device can cause said fluid-pressure-operable device to effect adjustments in said distance between said driving sprocket and said other sprocket sufficient for the tension in the chain, at a point where the chain is just leaving the circumference of said driving sprocket, to be maintained at a predetermined and low value.

4,284,193

BOUTIQUE CARTON AND CARTON BLANK

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 31, 1979, Ser. No. 108,532

Int. Cl.³ B65D *5/16, 5/54*

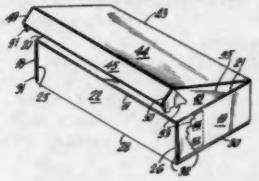
U.S. Cl. 206—45.31 **8 Claims**

1. An erected carton comprising a plurality of rectangular body panels including a top panel having an opening therethrough, a first end panel, a bottom panel and a second end panel all hingedly connected in the named sequence and each folded at a right angle to its connected panel; an adhesive end panel hingedly connected at a right angle to said top panel and adhered to the interior face of the said second end panel;

a plurality of pairs of side flaps connected to each of the said body panels to form a closed container, the side flaps of each pair being connected by a hinged fold line at a right angle on opposite sides of a body panel;

an overlying panel hingedly connected by a tear line to the second end panel and overlying the said top panel;

a lift panel hingedly connected at a right angle to said overlying panel at a fold line parallel and opposite to said tear



line; said lift panel overlying at least a portion of the exterior face of said first end panel;

first and second lift panel side flaps hingedly connected at opposite ends to said lift panel;

said lift panel side flaps each having a weakened line and each being fastened to a first end panel side flap beyond said weakened line, wherein upon use said top panel may be exposed by lifting said lift panel, tearing the lift panel side flap tear lines, disengaging said lift panel, continuing to lift the lift panel to thereby lift said overlying panel, and tearing away said overlying panel along its weakened line to expose the exterior face of said top panel.

4,284,194

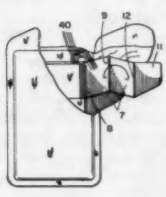
PACKAGE FOR A MULTIPLE OF STERILE SUTURES WITH OR WITHOUT NEEDLES ATTACHED

Alison Flatau, Boulder, Colo., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 12, 1979, Ser. No. 19,386

Int. Cl.³ A61B *17/06*

U.S. Cl. 206—63.3 **11 Claims**



1. A single dispensing surgical suture package containing multiple surgical suture strands which comprises

an outer label having:

a back panel;

an upper side flap adjacent and connected to said panel by at least one score line, and containing means for retaining the ends of said surgical suture strands;

a tab adjacent and connected to said upper flap by at least one score line, and opposite said panel, for exposing the ends of said strands;

a lower side cover flap adjacent said panel and said upper flap, and connected to said panel by at least one score line;

a bottom flap adjacent said panel and said lower flap and connected to said panel by at least one score line; and

an inner label having:

a back panel;

a strand cover flap adjacent and connected to one side of said inner label back panel by at least one score line;

a foam layer contained on coordinating surfaces of said inner label back panel and said strand cover flap;

at least two surgical suture strands contained on the foam layer in a sinusoidal configuration, with said strand cover flap folded along said score line onto said strands and with one end of said strands external to said inner label back panel and said strand cover flap;

whereby said inner label back panel is laid onto said outer label back panel with one end of said strands adjacent to and retained by said outer label upper side flap, said outer label bottom flap is folded onto said inner label cover flap, said outer label lower flap is folded onto said bottom flap, said outer label upper side flap is folded onto said outer label back panel or said inner label strand cover flaps, and said outer label tab is folded onto said outer label back panel or said outer label upper flap;

such that when said tab is lifted, a single suture can be grasped and directly dispensed from said package.

4,284,195

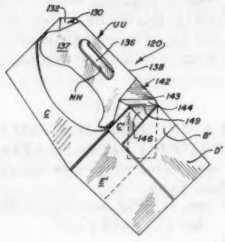
CARRIER AND HANDLE

Charles L. Champlin, Rittman, Ohio, assignor to Packaging Corporation of America, Evanston, Ill.

Filed Jan. 24, 1980, Ser. No. 115,054

Int. Cl.[3] **B65D** *65/32, 75/56, 5/46*

U.S. Cl. 206—427 **14 Claims**



1. A carrier handle formed from a blank of foldable sheet material comprising spaced depending end means; and an elongated hand-gripping unit spanning the distance between said end means and being foldably connected to corresponding upper peripheral portions of the latter and manually movable relative thereto between operative and inoperative modes; said unit including a pair of elongated panel sections arranged in face-to-face relation and having upper peripheral segments thereof interconnected by an elongated foldline, the ends of which are spaced inwardly from the end means, and gusset sections disposed intermediate the foldline ends and the adjacent end means, each gusset section having a first member foldably connected to corresponding peripheral portions of said unit panel sections, and a second member foldably connected to said first member and to the upper peripheral portion of the adjacent end means; said gusset section members assuming a folded relation and the folding connection between said second member and the peripheral portion of the adjacent end means being elevated relative to the folding connection between the first and second members of said gusset section, when said unit is in an inoperative mode; said gusset section members assuming a substantially unfolded relation, wherein the folding connection between the first and second members is elevated relative to the folding connection between the second member and the peripheral portion of said adjacent end means, when said unit is in an operative mode.

4,284,196

TUBULAR CONTAINER FOR VISCOUS, VISCOUS-ELASTIC, PLASTIC PRODUCTS AS WELL AS FOR POWDER OR GRANULAR PRODUCTS

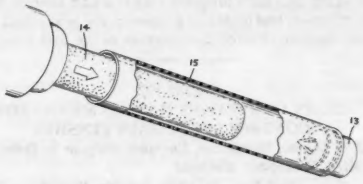
Conny B. Lagerkvist, Nora, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Filed Sep. 11, 1979, Ser. No. 74,305

Claims priority, application Sweden, Oct. 4, 1978, 7810386

Int. Cl.[3] **B65D** *71/08, 85/00*

U.S. Cl. 206—528 **12 Claims**



1. A tubular container for an expandible product, said container comprising a tube having opposite ends, end closure means at said ends, and an expandible product in said tube capable of exerting pressure on said end closures in the course of expansion of said expandible product, said tube being constituted of an olefin plastic whose molecules are oriented in both axial and radial directions, said molecules being unstretched and of a form which is substantially sine shaped.

4,284,197

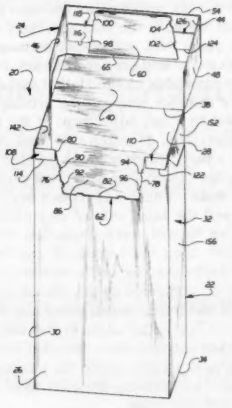
RECEPTACLE HAVING FRANGIBLE MEANS

George Meyers, Ashland, Ohio, assignor to The Garber Company, Ashland, Ohio

Filed Feb. 28, 1980, Ser. No. 125,492

Int. Cl.[3] **B65D** *17/16*

U.S. Cl. 206—626 **9 Claims**



1. A receptacle comprising spaced apart front and back panels, a pair of side panels extending between said front and back panels, a bottom panel connected with lower edges of said front, back and side panels, a cover pivotally connected with said back panel for movement between a closed position blocking access to the interior of said receptacle and an open position in which said cover is ineffective to block access to the interior of said receptacle, said cover including an upper section which extends between said front and rear panels when said cover is in the closed position and a front section which is disposed in flat juxtaposition with said front panel when said cover is in the closed position, said front panel including a rip

out section defined by a score line, said score line having first and second spaced apart sections extending downwardly from an upper edge toward a lower edge of said front panel at locations spaced inwardly from said side panels and a third section extending between said first and second sections of said score line at a location between the upper and lower edges of said front panel, and adhesive means for connecting said rip out section in flat juxtaposition with an inner side of said front section of said cover to hold said front section of said cover in flat abutting engagement with said front panel upon application to a lower edge portion of said front section of said cover of a force insufficient to tear said front panel along said score line and prior to opening of said receptacle, said adhesive means being effective to cause tearing of said front panel along said score line upon initial movement of said cover to the open position to form an opening which extends downwardly from the upper edge of the front panel toward the lower edge of the front panel to at least partially expose the contents of the receptacle, said front section of said cover having a lower edge which is disposed between a lower edge of the opening in the front panel and the lower edge of the front panel when said cover is in the closed position to enable said front section of said cover to block the opening in the front panel.

4,284,198

METHOD AND APPARATUS FOR REGULATING THE TIMING OF OPERATION OF MEANS FOR INFLUENCING CIGARETTES OR THE LIKE

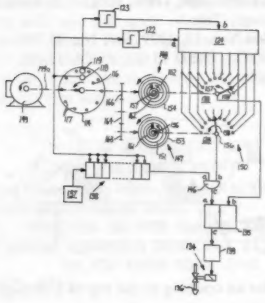
Friedo Koch, Wohltorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,519

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806786; Mar. 28, 1978, 2813271

Int. Cl.³ B07C *5/34*

U.S. Cl. 209—537 **19 Claims**



1. A method of regulating the timing of action upon articles which form part of, constitute or contain smokers' products and are advanced seriatim in a making and/or processing machine along a predetermined path consisting of successive sections, each bounded by a pair of neighboring articles and each including that part of said path along which an article must move from its preceding position to occupy the position previously occupied by the adjacent article in the direction of advancement, and extending past a station at which at least some selected articles of said succession are subjected to the action of signal-responsive influencing means, comprising the steps of generating a succession of control signals, one for each of said selected articles, before the respective selected articles reach said station; generating a series of n timing pulses during the interval of advancement of a selected article along a given section of said path following the advancement of such selected article to a predetermined position immediately ahead of said given section, each selected article advancing through a distance equaling d/n, wherein d is the length of said given section, during each interval between the generation of two successive timing pulses; and utilizing a selected one of said series of timing pulses for the application of a control signal to the influencing means when the corresponding selected article advances past said station.

4,284,199

CONTAINER WITH TEAR-OPENING ARRANGEMENT

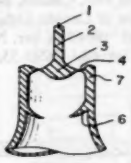
Federico Bigarella, Segrate, Italy, assignor to Lezard S.A., Luxembourg

Filed Dec. 6, 1979, Ser. No. 100,999

Claims priority, application Switzerland, Mar. 15, 1979, 2446/79

Int. Cl.³ B65D *1/02*

U.S. Cl. 215—32 **1 Claim**



1. A container with a tear-opening device particularly suitable for single-dose containers, obtained by the injection of thermoplastic material into suitable molds, consisting essentially of a closure membrane having a preferential rupture section comprising a particularly thin tearing surface, wherein there is present an internal annular lip, obtained in an injection single piece, having the function of favoring the dropwise dosage of the container content.

4,284,200

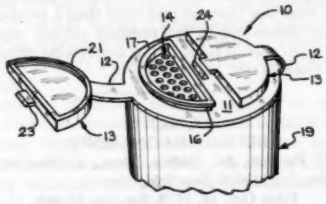
CHILD-RESISTANT DISPENSING CLOSURE

Randall G. Bush, and Peter P. Gach, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Oct. 1, 1979, Ser. No. 80,512

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—215 **2 Claims**



1. A one-piece, child-resistant, dispensing closure for a container having an open, circular upper end, said closure being formed of a stiffly resilient material and comprising,

(a) a skirt adapted to telescopingly mate with the open end of said container,

(b) a disk-like top integral with said skirt and extending across the space defined by said skirt, said top having two dispensing openings therethrough,

(c) an upwardly extending, integral top rim on said top surrounding each of the dispensing openings therein,

(d) a lid for each of said openings,

(e) a hinge for each of said lids that is integral with said top and with the respective one of said lids, said hinges extending outwardly from opposite sides of said top,

(f) an integral lid rim on each of said lids that is adapted to mate with the associated one of said top rims when said lid

is swung over into closed position overlying the respective one of said openings,

(g) overlapping ribs on said top rims and said lid rims which are interengaged when said lids are in closed position,

(h) means for retaining said closure in place on the end of said container, and

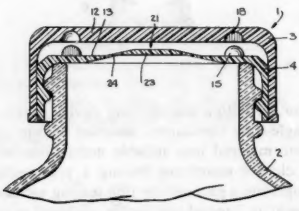
(i) cooperating means consisting of a fulcrum at the center of the top and an ear on the inner side of each of the lids which extends inwardly to closely spaced adjacency to said fulcrum when said lid is in closed position thereby providing a space into which pry-means may be inserted for disengaging the ribs and moving said lid away from closed position.

4,284,201

CHILD PROOF CAP

Eric Nixon, Richmond Hill, Canada, assignor to Anchor Cap & Closure Corporation of Canada Ltd., Ontario, Canada

Filed Jul. 10, 1980, Ser. No. 167,244
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—220 **12 Claims**



1. A safety closure cap for sealing a container comprising the combination of an outer shell having a top and a depending skirt, an inner shell having a top and a depending skirt, means for rotatively coupling said shells together in nesting relationship, screw-type container engaging means on said inner shell for engaging cap engaging means on the container, ratchet means on said shells for coupling said shells when said outer shell is turned in a cap applying direction and permitting relative rotation between said shells when said outer shell is turned in a cap unscrewing direction and a flexible panel extending upwardly from said cover of said inner shell a portion only of the ratchet means height for resisting ratchet engagement when the outer shell is turned in an unscrewing direction and is moved towards said inner shell.

4,284,202

REUSABLE CONTAINER

Norman C. Barstow, Jr., Hadley, Mass., assignor to Hardigg Industries, Inc., South Deerfield, Mass.

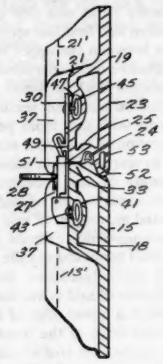
Filed Oct. 19, 1979, Ser. No. 86,668
Int. Cl.³ B65D *6/00, 6/12, 6/16*
U.S. Cl. 220—4 B **7 Claims**

1. A reusable container comprising:

a plastic base member having a bottom and sidewalls, said sidewalls being hollowed and having a plastic lid member having a top and sidewalls, said sidewalls being hollowed and having inside and outside portions, said lid and base members having mating raised tongue and recessed groove portions at the open ends of their respective sidewalls;

a gasket positioned in said groove portion;

means for registering and supporting said lid and base with respect to one another including one of said base and lid members having at least one raised male interlock portion at the open end of at least one of said sidewalls, and the other of said base and lid members having at least one mating female interlock portion at the open end of at least one sidewall and being aligned with said male interlock member; and



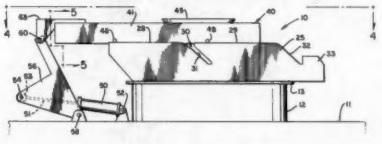
locking means for holding said lid member against said base member.

4,284,203

STORAGE BIN CLOSURE WITH LIQUID SEAL

Erbie G. Mize, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Nov. 13, 1979, Ser. No. 93,748
Int. Cl.³ B65D *43/20, 43/26, 53/06*
U.S. Cl. 220—345 **2 Claims**



1. A closure for an opening in the top of a storage bin comprising:

an annular reservoir surrounding said opening and containing a liquid;

a pair of parallel tracks on opposite sides of said reservoir;

a carriage mounted between said tracks over said opening for movement on rollers attached to said carriage along said tracks, said carriage including a guide means for guiding material to said opening and into said bin and a sealing means spaced apart from said guide means, said sealing means including a downwardly extending annular wall rigidly fixed to said carriage and shaped to be received within said annular reservoir;

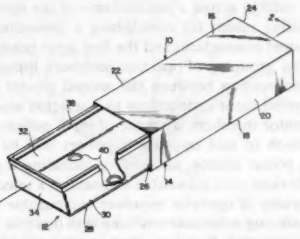
said tracks defining a path along which said carriage travels on said rollers between two positions of said carriage, a first position wherein said guide means is aligned over said opening, and a second position lower than said first position wherein said annular wall extends into the liquid in said annular reservoir; and

means for selectively moving said carriage along said tracks between said first position and said second position.

4,284,204
DIMPLED TRAY PACKAGE WITH SELF-LOCKING FEATURE

Howard M. Carey, Jr., Staunton, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Nov. 7, 1979, Ser. No. 92,116
Int. Cl.[3] B65D *43/20*
U.S. Cl. 220—346 8 Claims

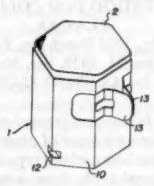


1. A package comprising:
a tray constructed from panels articulating from one another;
a sleeve for receiving said tray;
said tray including tapered side panels;
detent means formed in a bottom panel of said tray;
means formed in a bottom of said sleeve for receiving said detent means when said tray is inserted to a predetermined position within said sleeve thereby locking said tray in said sleeve;
said sleeve having side walls cooperating with said tapered side panels of said tray so as to create voids between respective side panels and side walls when said tray is inserted in said sleeve; and
said bottom wall of said sleeve being deformable and cooperating with said side walls of said sleeve so as to release said detent means from engagement with said receiving means upon the exertion of sufficient forces against said side walls of said sleeve thereby allowing said tray to be displaced from said sleeve.

4,284,205
FOLDABLE CUP

Isao Hirata, Sagamihara, Japan, assignor to Tokai Metals Company, Limited, Yokohama, Japan

Filed Oct. 10, 1979, Ser. No. 83,317
Claims priority, application Japan, Oct. 11, 1978, 53-124173
Int. Cl.[3] B65D *90/04, 5/46*
U.S. Cl. 220—418 6 Claims

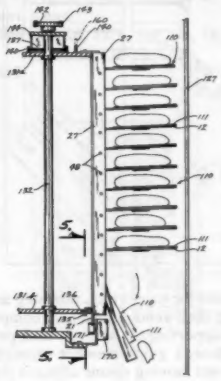


1. A foldable cup, comprising: a hollow outer shell formed by folding a rectangular plate-like sheet upon itself and by bonding the two side edges thereof together, and a pouch inserted in said outer shell and secured thereto, said outer shell being provided with a plurality of substantially vertical folding lines parallel with two side edges of the outer shell, and further provided with at least one pair of substantially horizontal parallel cuts crossing one of said vertical folding lines and with a pair of substantially vertical lines connecting the respective ends of these cuts for defining at least one stopper which, upon expanding the foldable cup, may be folded inwardly along said vertical folding line for enhancing the holdability of a cup shape and the self-standing ability of the outer shell.

4,284,206
CAROUSEL DISPENSING APPARATUS

Francis A. Wittern, 1616 Casady, Des Moines, Iowa 50318

Filed Sep. 6, 1979, Ser. No. 73,002
Int. Cl.[3] G07F *11/06, 11/54*
U.S. Cl. 221—90 8 Claims



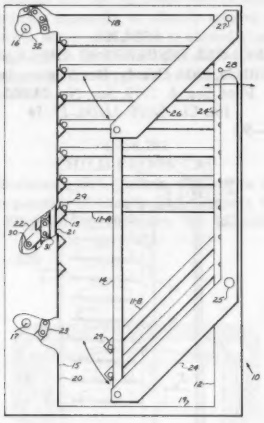
1. Product dispensing apparatus comprising:
a housing having a product delivery compartment attached thereto;
frame means rotatably connected to said housing;
a first product column assembly attached to said frame means;
a first set of shelves pivotally attached to said first product column assembly, the shelves of said first set being oriented one above another, each of the shelves of said first set of shelves having a substantially horizontal product storing position and a non-horizontal dispensing position;
a second product column assembly attached to said frame means;
a second set of shelves pivotally attached to said second product column assembly, the shelves of said second set of shelves being oriented one above another, each of the shelves of said second set of shelves also having a substantially horizontal product storing position and a non-horizontal dispensing position;
a radially extending partition wall disposed on each side of each set of shelves;
means on each of said shelves for allowing each respective one of said shelves to fold from an extended width when in the horizontal product storing position to a narrower width in the non-horizontal dispensing position;
means for rotating said frame means and thereby said first and second columns of shelves about a vertical axis between a selection position and at least one other rotational position; and
delivery means attached to said housing for selectively causing the lowermost horizontally disposed shelf at said selection position to move to said non-horizontal dispensing position thereby delivering a product on said lowermost horizontally disposed shelf to said product delivery compartment.

4,284,207

DROP SHELF MECHANISM

Donald K. Christian, 119 Woodbine Ter., Spartanburg, S.C. 29301

Filed Aug. 13, 1979, Ser. No. 66,480
Int. Cl.[3] G07F *11/06*
U.S. Cl. 221—90 6 Claims



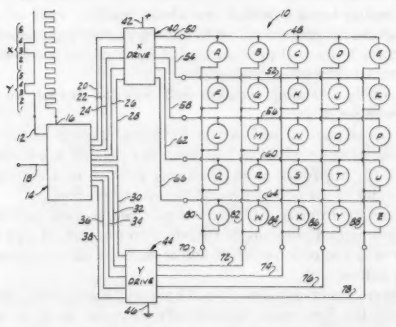
1. A novel means for supporting, releasing and resetting the shelves of a drop shelf vending machine comprising pivotally mounted pawls supporting the shelves, each pawl having a lip and a guide surface, a guide member supporting the lips in leaning contact, and moving means adjacent the guide and lip carrying an actuator pin wherein said actuator pin traversing a generally vertical predetermined path on its upward cycle wedges itself between said guide member and a pawl lip causing said pawl to rotate about its pivotal axis thus being removed from its position of support under a pivotally mounted shelf and which on its downward cycle is guided over a path created at least in part by a surface of said pawl other than that engaged on its upward path.

4,284,208

VEND CONTROL SYSTEM

Joseph L. Levasseur, Chesterfield, Mo., assignor to H. R. Electronics Company, St. Louis, Mo.

Filed Aug. 9, 1979, Ser. No. 65,280
Int. Cl.[3] G07F *11/00*
U.S. Cl. 221—129 9 Claims



1. A control circuit including means for selecting for energizing one among a plurality of operator members comprising a plurality of operator members each having first and second input connections, means connecting said operator members into a matrix circuit wherein the operator members are arranged electrically into first and second groupings wherein the first input connections of operator members in each of the respective first groupings are connected together and wherein the second input connections of operator members in each of the respective second groupings are connected together, a power source having first and second power connections and an operating voltage therebetween, means for establishing an operating voltage across a selected one of the operator members, including means for establishing a connection between the first power connections and the first input connections to a selected first grouping of operator members, means for establishing a connection between the second power connection and the second input connections to a selected second grouping of operator members, a source of input pulses encoded to control which of said operator members will be connected across the power source, said source including a plurality of selection devices each actuatable to establish a selection of one of said plurality of operator members and capable when actuated of producing a distinctively time encoded pair of pulses, a data storage device having a first input connected to said source of encoded input pulses for storing in the data storage device information representative of the pair of pulses produced when a selection device is actuated, a source of clock pulses and a second input to the data storage device connected to said source of clock pulses, said data storage device storing the time encoded signals based on comparison thereof with the clock pulses, said data storage device having first and second sets of output connections, a first driver circuit having a set of input connections connected respectively to the output connections of the first set of output connections of the data storage device, a second driver circuit having a set of input connections connected respectively to the output connections of the second set of output connections of the data storage device, means connecting the first power connection to the first driver circuit, means connecting the second power connection to the second driver circuit, said first driver circuit having a plurality of output connections each of which is connected to the first input connections of operator members of a respective first grouping, said second driver circuit having a plurality of output connections each of which is connected respectively to the second input connections of operator members of a respective second grouping, first control means for establishing a circuit connection between the first power connection and the first connections to the operator members in a selected first grouping, and second control means for establishing a circuit connection between the second power connection and the second connections to the operator members in a selected second grouping.

4,284,209

DEVICE AND METHOD FOR COLLECTING BLOOD PLASMA

Robert E. Barbour, Jr., 1904 Bunch Dr., Fort Worth, Tex. 76112

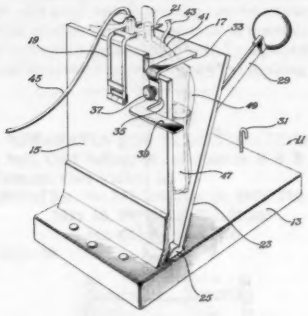
Filed Jun. 21, 1979, Ser. No. 50,668
Int. Cl.[3] B65D *35/28*
U.S. Cl. 222—1 8 Claims

1. In a device for forcing segregated plasma from a flexible collecting bag containing a layer of plasma over a layer of red blood cells, the device being of the type having a base, a fixed member secured normal to the base, a movable member connected to the base by a hinge and rotatable about the hinge to substantially close against the fixed member, spring means for urging the movable member toward the fixed member, and support means for retaining the bag between the fixed and movable members, the improvement comprising:

stop means secured to one of the members for stopping further closing movement of the movable member at a point selected to occur when a large portion of plasma has been forced from the bag;

the stop means being releasable to allow further closing

movement of the movable member and further flow of plasma from the bag while being monitored by an operator to assure that the further closing movement is stopped prior to the flow of red blood cells from the bag.



4,284,210

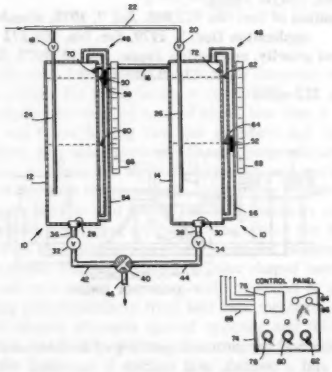
STATIC METERING PUMP

Vladimir Horak, 353 High St., Closter, N.J. 07624

Continuation-in-part of Ser. No. 862,744, Dec. 21, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,818

Int. Cl.³ B67D *5/08*

U.S. Cl. 222—14 **10 Claims**



1. A static metering pump comprising a pair of tanks, tube means connecting said tanks at the upper portions thereof for equalization of pressure within said tanks, a pair of electrically-operated intake valves disposed, one each, at upper portions of said tanks, a pair of electrically-operated outlet valves disposed, one each, at lower portions of said tanks, respective outlet tubes communicating with the outlet valves of each of said tanks and communicating with a common discharge tube, upper and lower liquid sensor means disposed on each of said tanks for sensing pre-set selected full levels and empty levels in said tanks, and forming therebetween a normal pre-set liquid cavity of equal volume in each of said tanks, said cavities being sized to contain a normal pre-set volume of liquid, circuit connection means interconnecting said inlet valves, said outlet valves and said upper and lower liquid level sensor means, with said upper and lower liquid level sensor means and said circuit connection means being adapted to open and close said valves in order to permit filling said first tank from an external source of liquid while discharging liquid from said second tank and then permitting discharging liquid from said first tank while filling said second tank, electrically-operated control means for permitting a preselected number of tank filling and discharge cycles to be performed automatically until a total selected volume of liquid is dispensed from both tanks, representing a multiple of said normal pre-set volumes, after which operation of said static metering pump is stopped, thereby permitting the dispensing of a preselected volume of liquid, and an adjustable fractional liquid level sensor disposed on one of said tanks intermediate said upper and lower liquid sensors for sensing a selected fractional filled level for said one tank at the commencement of the metering operation, said control means being adapted to commence the metering cycles by the discharge of said one tank.

4,284,211

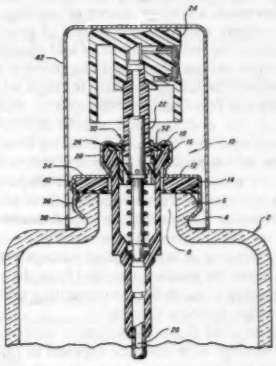
NIBBED FERRULE FOR HOLDING CAP

Emil Meshberg, Fairfield, Conn., assignor to Emson Research, Inc., Bridgeport, Conn.

Filed Sep. 26, 1979, Ser. No. 78,947

Int. Cl.³ B67B *3/02*

U.S. Cl. 222—182 **1 Claim**



1. A closure for a container having a neck and a lip on the neck of generally cylindrical configuration comprising:

a dispenser passing through the neck into the container,

a sheet metal ferrule holding said dispenser in place,

a circular gasket, through which the dispenser passes, extending between the ferrule and the lip, and

a removable covering having a substantially cylindrical, elastically deformable surface for frictionally engaging the ferrule, said covering slidable on said ferrule for application and removal,

said ferrule comprising a substantially cylindrical sheet metal body portion having an end surface through which the dispenser projects, said substantially cylindrical body portion receiving the neck, and a deformable skirt portion depending from said body portion and engaging the lip,

at least three oblong nibs, oriented transverse to the direction of application and removal of said covering, projecting radially from the ferrule into engagement with said elastically deformable cylindrical surface of said covering, the nibs each comprising an outward deformation of the cylindrical body portion located between the end surface and the deformable skirt portion, the nibs placed closer, axially, to the end surface than to the deformable skirt portion, and axially spaced apart from the deformable skirt portion such that there remains an axially extending portion of said cylindrical body portion which is not deformed which provides a radial contact surface for the gasket to prevent leakage past said gasket, and

the gasket radially in contact with said portion of cylindrical body portion which is not deformed, adjacent to the deformable skirt portion and seated on the lip.

4,284,212

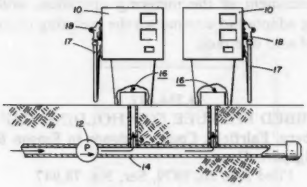
PILOT ACTUATED DIAPHRAGM VALVE

Richard L. Caswell, Salisbury, Md., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 804,964, Jun. 9, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,433

Int. Cl.³ G01F *11/00*; F16K *31/02*

U.S. Cl. 222—333 **6 Claims**



1. In a gasoline dispensing system including a plurality of gasoline dispensers, a storage source of gasoline, pump means operable to supply a pressurized supply of gasoline from said storage source concomitantly to all of said plurality of gasoline dispensers when at least one of said dispensers is actuated, each of said dispensers including a nozzle through which to deliver gasoline supplied from said storage source, means to actuate the dispenser for enabling said nozzle delivery and a diaphragm valve operably positioned in series flow relation with the dispenser inlet supplied by said pump means for preventing flow from the pressurized supply to the dispenser when the dispenser is not actuated and to enable flow to the dispenser when the dispenser is actuated, the improvement in which said diaphragm valve comprises in combination:

(a) a body forming an internal fluid passage between an inlet and an outlet for gasoline supplied from the storage source and including a seat defined surrounding said passage at an intermediate location therein;

(b) an imperforate flexible diaphragm supported proximate to said passage with one face exposed to fluid pressure at said inlet and adapted to cooperate with said seat to open and close said passage to fluid flow;

(c) a defined fluid chamber in communication with said inlet providing fluid pressure exposure to the opposite face of said diaphragm;

(d) restrictor means in the fluid flow path between said inlet and said chamber for restricting the fluid flow rate into said chamber; and

(e) pilot valve means operable by said dispenser actuating means between open and closed positions for conducting fluid flow when open from said chamber to the outlet of said body for enabling relatively greater fluid forces at said inlet to move said diaphragm toward its open position with respect to said seat.

4,284,213

CLOSURE AND NOZZLE SYSTEM FOR CONTAINER FOR AIR-CURABLE MATERIAL

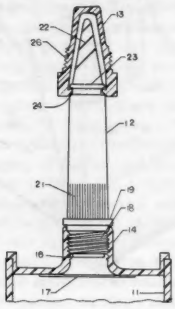
Headie O. Lee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 7, 1980, Ser. No. 166,006

Int. Cl.³ B65D *47/10*

U.S. Cl. 222—541 **2 Claims**

1. In a closure system for a container for air-curable materials, said container comprising a threaded neck for attachment of a dispensing nozzle having threads adapted to mate with the threads on said neck, said nozzle further including a tapered normally closed tip portion designed to be cut off at a point along a portion of its length to provide a desired nozzle orifice size, the improvement which comprises a hollow cap having an external threaded portion also designed to mate with the threads on said neck of said container and having interconnection means formed on an interior surface thereof designed to cooperate with corresponding interconnection means formed on the exterior surface of said nozzle at a point short of the nozzle portion which is designed to be cut off, whereby the cap can be affixed over the nozzle during short term nonuse or in



place of the nozzle can be threadedly attached to the neck of said container during long term nonuse to seal the contents against exposure to air thereby extending the useful life of the remaining contents of the container.

4,284,214

METHOD OF CONTINUOUS CASTING

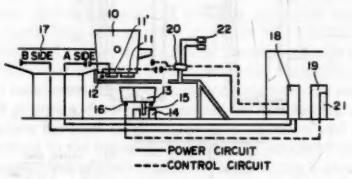
Masahisa Tate; Tetsuya Yoshiwara, and Tatsuo Kobatake, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 922,805, Jui. 7, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 101,272

Claims priority, application Japan, Jul. 13, 1977, 52-82883

Int. Cl.³ B22D *41/08*

U.S. Cl. 222—590 **4 Claims**



1. A method for automatic pouring of molten metal between a ladle and a tundish, said tundish is provided with a level detector, and employing circuit means designed for feedback of signals supplied from the level detector, said ladle including a rotary opening and closing means together with a plurality of large and small diameter nozzles, and control means for controlling said rotary opening and closing means through feedback signals from said circuit, automatically selecting a small diameter nozzle when the molten metal level in the tundish exceeds an upper level, and automatically selecting the larger diameter nozzle with full opening when said lever has lowered to below a lower level, selection of said respective nozzle diameters being responsive to signals received from said level detector; comprising the steps of: employing a plurality of pouring nozzles with at least one of a first nozzle having a pouring rate at full opening larger than the rate necessary for maintaining a reference level in a tundish and at least one of a second nozzle from the first nozzle to provide a pouring rate at full opening smaller than a rate necessary for maintaining a reference pouring rate, selectively controlling said pouring nozzles by full opening or closing in response to the level of molten metal in the tundish and selecting from a plurality of pouring nozzles of different diameters, a large nozzle having a pouring rate at wide open pouring greater than that required to

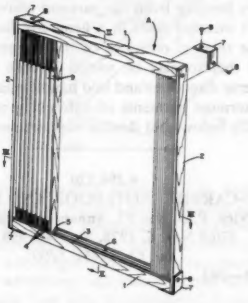
maintain said reference level, and a small nozzle having a pouring rate at wide open pouring slightly greater than that required to maintain said reference level during an initial pouring period, said small nozzle pouring rate becoming, after said initial period smaller than that required to maintain said reference level and switching back and forth for a plurality of times, each of said respective nozzles during the pouring cycle.

4,284,215

APPARATUS FOR PLEATING CLOTH

LaVonne Nye, Coal Valley, Ill., assignor to B & B Miniatures The Whimsey, Coal Valley, Ill.

Continuation of Ser. No. 871,916, Jan. 24, 1978. This application May 18, 1979, Ser. No. 40,263
Int. Cl.³ A41H *43/00*
U.S. Cl. 223—33 **6 Claims**



1. An apparatus for pleating miniaturized draperies and the like fabric articles for small furniture comprising:

a rigid frame covering an area of about less than 1 square foot, said frame having two side members and two end members, said side members fastened perpendicularly to said end members in a non-detachable manner and in fixed spaced opposite relationship to each other, thereby providing rigidity to said frame, said side members and said end members defining a central plane within the frame;

each of said side members having a U-shaped channel, each side member comprising a rectangular shaped base member and two spaced opposing walls attached to and extending perpendicularly from said base member, each of said U-shaped channels spaced opposite and facing the other of said U-shaped channels in the opposite side member;

guide means located in each of said side members extending substantially the length of said side members, each of said guide means supported individually within a corresponding U-shaped channel in each of the respective side members; and

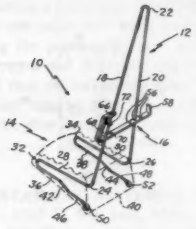
a plurality of flat, parallel flexible pleating slats extending between said side members with each end of each slat permanently trapped within said side members by said guide means, each of said slats being slidable along said guide means independently of the others of said slats in a nondetachable manner from said guide means with slight play between the guide means and each end of every slat, said slats held substantially non-rotatably along the central axis within said end members with the flat sides of said slats facing each other, the flexibility of the slats and the play between said guide means and each end of every slat allowing the slats to move in a free rectilinear manner, without binding of the ends trapped by the guide means resulting from flexing of the slats between the ends thereof when said plurality of slats are manipulated by individual sliding along the guide means for threading a fabric material through said plurality of slats for pleating.

4,284,216

SOCK DONNING ASSIST DEVICE

Ragnvald G. Leland, P.O. Box 4174, Palm Springs, Calif. 92263

Filed Jan. 2, 1979, Ser. No. 515
Int. Cl.³ A47J *51/06*; A47G *25/04*
U.S. Cl. 223—111 **6 Claims**



1. An improved device for assisting in the donning of a foot covering, which comprises:

handle means being a pair of laterally spaced, elongated frame members;

insert means extending integrally from said handle means and adapted to be placed within a foot covering for spreading same; and

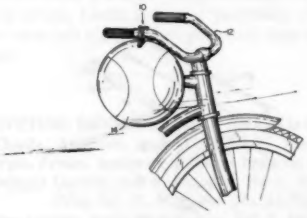
means operatively coupled to said handle means for selectively maintaining said insert means in one of a plurality of spaced apart positions, said means operatively coupled to said handle means being a control bar pivotally mounted to one of said frame members, said means operatively coupled having first means for maintaining said insert means relatively close together and second means for maintaining said insert means relatively wide apart, said first and second means respectively comprise first and second notch means formed in said control bar for selectively releasably retaining the other of said frame members therein.

4,284,217

BALL CARRIER

James J. Johnston, 14 Anchorage La., Old Saybrook, Conn. 06475, and Robert W. Clarke, 15 Wilcox St., Wethersfield, Conn. 06109

Filed Jan. 21, 1980, Ser. No. 114,116
Int. Cl.³ B62J *11/00*
U.S. Cl. 224—30 R **17 Claims**



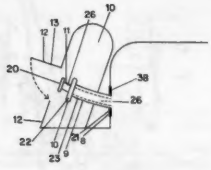
1. A carrier for an inflatable ball having a valve disposed within the interior of the ball, the valve including a blind generally cylindrical bore opening outwardly through the peripheral surface of the ball, said carrier comprising resilient clip means for snap-on connection to the handlebar of a bicycle, and ball retaining means mounted on said clip means for gripping the valve within the bore to releasably retain the ball in connected relation to said clip means.

4,284,218

ATRAS SPARE TIRE MOUNTING KIT

James P. Gillis, and John W. Robinson, Jr., both of 197 Scribner Ave., Norwalk, Conn. 06854

Filed May 22, 1979, Ser. No. 30,742
Int. Cl.³ B62D *43/02*; B60R *13/00*
U.S. Cl. 224—42.06 **5 Claims**



1. A kit which permits the positioning of a standard size spare tire outside of and rearwardly of the trunk of an automobile, which automobile (1) is otherwise devoid of a permanent, stationary rearward assembly for so positioning a spare tire, (2) includes a fuel filler port located rearwardly and centrally of the automobile trunk and (3) includes a rear bumper, said kit comprising:

a. a circular metal housing sized to encompass the spare tire;

b. a rear panel sized to cooperate with said circular metal housing for enclosing the spare tire;

c. said rear panel having a fuel port filler door therein;

d. a metal unit including (1) a unitary mounting plate adapted to be bolted in a vertical position externally of the automobile trunk, (2) a tubular protective housing extending from said mounting plate, and (3) a wheel mounting hub attached to said protective housing for carrying the spare tire;

e. a fuel conduit extension tube adapted to be inserted within said protective housing for extension between the fuel filler port of the automobile and said fuel port filler door;

f. a studded metal cinch for securing together said circular metal housing and said rear panel; and

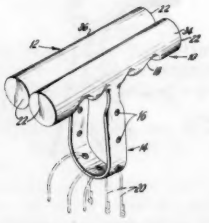
g. at least one bumper extension telescoping rod for permitting rearward repositioning of the automobile bumper to provide space for accommodating said metal housing.

4,284,219

MULTIPLE CLOTHES HANGERS CARRYING DEVICE

Richard R. Standel, Jr., 1177 Race St., (Penthouse 5), Denver, Colo. 80206

Filed Jan. 5, 1976, Ser. No. 646,676
Int. Cl.³ B65D *71/00*
U.S. Cl. 294—152 **14 Claims**



1. A hanger carrying device for simultaneously carrying multiple clothes hangers comprising:

a flexible support member having hanger-accommodating aperture means for removably fixedly mounting at least one clothes hanger, said flexible member being tapered at its ends to a width adapted to comfortably fit between the fingers of the human hand; and

handle means fixedly attached to each end of said flexible member, each of said handle means being adapted to conform to a generally semi-cylindrical shape, said handle means further including a plurality of curved depressions to provide a surface for being gripped by the fingers of a hand and interlocking means for preventing relative movement when said handle means are juxtaposed together in parallel alignment.

2. A hanger carrying device both for grouping a plurality of clothes hangers on a garment conveyor device and for enabling the plurality of hangers to be carried by hand when removed from the conveyor device, comprising:

a flexible support member having hanger-accommodating apertures formed therein for removable attachment of clothes hangers; and

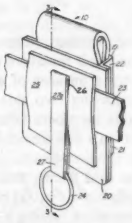
handle means fixedly attached to each end of said flexible support member, said support member having sufficient flexibility so that, when attached to one or more clothes hangers hanging from the garment conveyor device, said support member rests in a generally horizontal position and the relative positions of the hangers removably attached thereto may be varied in both longitudinal and transverse directions and said handle means rests between the outermost garments of different groups of garments, generally below said flexible support member.

4,284,220

BELT-CARRIED NOTEBOOK AND HOLSTER

Gerald W. Nice, P.O. Box 57, Annabella, Utah 84711

Filed Nov. 6, 1978, Ser. No. 958,128
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—242 **1 Claim**



1. A holstered notebook holder comprising a notebook holder adapted to receive a notebook pad, said holder having stiff cover members hinged together along one set of corresponding end edges and free along the other edges to permit opening and closing of one cover member relative to the other; cooperative, substantially continuous strips of intergripping fabric of a cocklebur type secured along and approximately coextensively with the inside margins of corresponding free end edges of said cover members that are opposite said hinged end edges, for retaining without external encumbrances said cover members closed about a received notebook pad; and a belt-carried holster open at its upper end and having stiff walls with smooth inside wall faces for receiving said notebook holder, said inside wall faces defining a said notebook-holder-receiver pocket of sufficiently less depth than the length of the notebook holder to provide for protrusion of the hinged end of the latter entirely above the holster as a readily graspable portion of said notebook holder providing immediate withdrawable accessibility for the user, wherein the holster includes a rear panel member secured to the exterior face of the holster back wall so as to provide a passage horizontally for receiving a waist belt, said panel member having a vertical slot intermediate its width dimensioned to receive a closed loop member of a ring-retaining strap, a club-holding ring, and a retaining strap for said ring, said strap having a closed loop member adapted to be received by said vertical slot and to

have said waist belt passed therethrough to hold said club-holding ring adjacent to said holster.

4,284,221

APPARATUS FOR BREAKING WEAKENED PORTIONS OF RUNNING WEBS OR THE LIKE

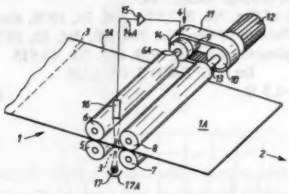
Erich Nagel, Anzing; Franz Ziegler, and Ferdinand Schaner, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 97,965

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851894

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—100 **23 Claims**



1. Apparatus for separating sections of an elongated web wherein the neighboring sections are connected to each other by spaced-apart elongated weakened web portions extending substantially transversely of the web, comprising means for transporting the web lengthwise in a predetermined direction, including a first advancing unit and a second advancing unit located behind said first unit, as considered in said direction; means for normally driving said units at the same speed; regulating means actuatable to vary the speed of at least one of said units so that the speed of said first unit exceeds the speed of said second unit while a weakened portion is located between said units; and means for monitoring the web and for actuating said regulating means whenever a weakened portion advances beyond said second unit but is still on its way toward said first unit.

4,284,222

PRESSING ROLLER FOR USE IN SHEET-ADVANCING ARRANGEMENTS

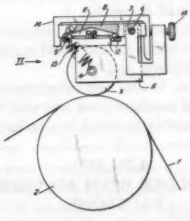
Dietrich Hank, Leipzig, German Democratic Rep., assignor to VEB Polygraph Druckmaschinewerke Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 881,509, Feb. 27, 1978. This application Mar. 22, 1979, Ser. No. 23,086

Claims priority, application German Democratic Rep., Feb. 25, 1977, 1197548

Int. Cl.³ B65H *17/22*

U.S. Cl. 226—181 **7 Claims**



1. In an arrangement for advancing sheet material, a combination comprising a support; two rollers; means for mounting said rollers on said support for rotation and for movement of at least one of said rollers into and out of an operating position in which said rollers confine the advancing sheet material between themselves; means for biasing said one roller out of said operating position; means for controlling the friction between at least the other of said rollers and the advancing sheet material, including a housing mounted on said support and bounding a chamber having an open end, a diaphragm deflectably spanning and sealingly closing said open end of said chamber; means for transforming a deflection of said diaphragm into the movement of said one roller into said operating position; and means for varying the pressure in said chamber to thereby deflect said diaphragm and urge said one roller against said biasing means and thus the advancing sheet material confined between said rollers against said other roller with a force proportionate to the pressure in said chamber.

4,284,223

DEVICE FOR STAPLING MATERIAL ON CEILINGS

Albert R. Salcido, 1235 E. 5th Ave., Mesa, Ariz. 85204, and Renato Rabago, 826 W. Louisana St., Tucson, Ariz. 85706

Filed Sep. 24, 1979, Ser. No. 78,444

Int. Cl.³ B25C *1/04, 7/00*

U.S. Cl. 227—5 **3 Claims**

1. A device for stapling material on a ceiling and a side wall comprising:

a. a pneumatic staple gun having a high pressure air input and a contact trigger for forcing staples into a surface when said contact trigger contacts said surface;

b. an elongated hollow tubular handle having a first and a second end and including a predetermined length and a longitudinal axis;

c. a bracket hingedly securing said gun to said first end of said handle to maintain said axis either perpendicular or parallel to said surface as selected by an operator.

d. said second end having a coupling for attachment to a high pressure pneumatic hose;

e. means pneumatically and flexibly connecting said first end to said staple gun high pressure air input; and

f. said tubular handle providing pneumatic communication between said high pressure pneumatic hose and said staple gun.

4,284,224

RIVETING DEVICE USING A SHAPED CHARGE

Jean-Claude Arnaison, and Jean-Claude Lacote, both of Bourges, France, assignors to L'Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Jul. 31, 1979, Ser. No. 62,298

Claims priority, application France, Jul. 5, 1978, 78 19952

Int. Cl.³ B21J *15/18*

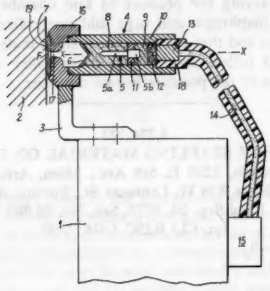
U.S. Cl. 227—9 **5 Claims**

1. A pyrotechnic riveting device for fastening metallic elements together comprising:

a support attached to a first element to be fastened;

a ring element connected to said support element, said ring element having a central bore, said bore having an inwardly flared portion, the outward portion of said bore located adjacent a second element to be fastened;

a hollow body member having one end sealed with the flared portion of said bore, and a second end, said hollow body having a central axis coincident with said bore axis;
a fuse member sealing said second end;
an explosive charge located within said hollow body communicating with said fuse member;
a sealing member for separating said explosive charge from said bore; and



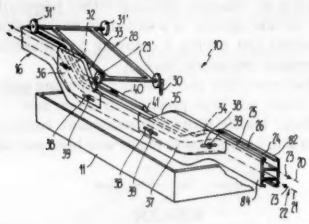
a nail member located within said charge and aligned along said axis, said nail member having a shank portion having a diameter smaller than the diameter of said bore and a head portion having a diameter larger than said bore diameter, said nail member being propelled into said bore upon ignition of said explosive charge, said nail member penetrating said second element whereby said elements are fastened together.

4,284,225

APPARATUS FOR SOLDERING COMPONENTS MOUNTED AT PRINTED WIRING BOARDS

Fritz Hess, Mettmenstetten, Switzerland, assignor to EMP AG, Falkenweg, Switzerland

Filed Nov. 20, 1979, Ser. No. 95,992
Claims priority, application Switzerland, Dec. 8, 1978, 12543/78
Int. Cl.³ B23K *31/02*
U.S. Cl. 228—180 R **4 Claims**



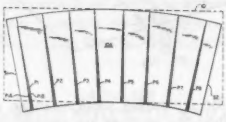
1. An apparatus for soldering printed circuit boards carrying circuit components, comprising:
means defining a solder bath for soldering leads of the components to the printed circuit board;
a number of transport frames having leading corners and trailing corners;
a conveyor device for moving the transport frames through the solder bath;
each of the transport frames serving for receiving a printed circuit board which carries circuit components;
guide track means for guiding the leading corners and the trailing corners of the transport frames;
said guide track means being provided with respective descending ramps followed by respective ascending ramps at the region of the solder bath and viewed with respect to the direction of conveying of the transport frames;
the spacing between the descending ramps, viewed in conveying direction of the transport frames, operatively associated with the leading corners and the trailing corners of the transport frames, being smaller than the length of the transport frames; and
the spacing between the ascending ramps between the leading corners and the trailing corners of the transport frames essentially corresponding to the length of the transport frames.

4,284,226

TWO-PIECE PLEATED FOAM CUP

David H. Herbst, Reisterstown, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Continuation of Ser. No. 872,019, Jan. 24, 1978, abandoned, which is a division of Ser. No. 704,940, Jul. 13, 1976. This application Aug. 3, 1979, Ser. No. 63,515
Int. Cl.³ B65D *3/06, 3/28*
U.S. Cl. 229—1.5 B **18 Claims**



1. In a container, a frustoconical sidewall structure comprising:
an arcuate blank formed from an initially rectangular blank of foam plastic sheet material;
said initially rectangular blank being provided with a plurality of pairs of divergent pleat lines defined in the surface and across the width dimension thereof, a corresponding line of each pair being overlapped with the other line of that pair to form a multi-layered triangular area for each said pair of pleat lines extending from a top portion to a bottom portion of said sidewall structure, thereby constraining said initially rectangular blank to assume an arcuate shape defining said arcuate blank;
said arcuate blank having opposing ends across the width thereof; and
said opposing ends being overlapped and heat sealed together to form said frustoconical sidewall and provide a side seam for same.

12. A container made by the method comprising the steps of:
providing a rectangular blank of plastic foam sheet material;
forming a plurality of pairs of divergent pleat lines across the width dimension of said blank;
overlapping one pleat line with the other to form triangular double layers in said blank, thereby constraining said blank to assume an arcuate shape;
overlapping the opposite edges of said blank in a side seam configuration to form a multi-sided, substantially frustoconical cup sidewall assembly;
placing said sidewall assembly in a conforming mold means;
providing a bottom blank in said mold means at one end of said sidewall assembly; and
applying heat thereto to fuse said overlapping areas and heat seal said side seal configuration and said bottom blank to said sidewall assembly to provide a unitary cup structure.

4,284,227

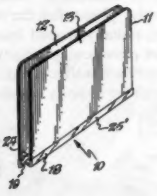
EXPANSION FOLDER WITH ACCORDIAN-PLEAT BACKBONE

Joseph T. Corey, Williamsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,277
Int. Cl.³ B65D *37/00;* **B42F** *7/02*
U.S. Cl. 229—1.5 R **12 Claims**

1. A backbone construction for a file folder having front and

rear covers and a backbone integral with said covers comprising a backbone portion having an inner surface and an outer surface, a first groove between said front cover and said inner surface of said backbone portion, a second groove between said rear cover and said inner surface of said backbone portion, said first and second grooves defining the outer peripheral sides of the inner surface of said backbone portion, first and second ends on said backbone portion extending between said first and second grooves, first and second slots located between said first and second grooves and extending inwardly from said first and second ends, respectively, toward each other, planar



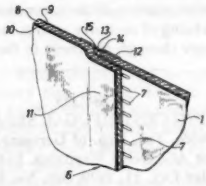
sheet material overlying said inner surface and said first and second grooves and said first and second slots and portions of said front and rear covers adjacent to said first and second slots, a perforation located at the inner end of each of said first and second slots, respectively, and extending through said backbone portion and said planar sheet material, and an elongated slit extending between said first and second perforations and through said planar material and partially through said backbone portion on said inner surface thereof to cause said backbone portion to flex inwardly in accordian-pleat fashion between said front and rear covers.

4,284,228

PACKING CONTAINERS OF LAMINATED MATERIAL HAVING VENTING MEANS

Renato Cetrelli, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Jun. 14, 1979, Ser. No. 48,634
Claims priority, application Sweden, Jun. 21, 1978, 7807085
Int. Cl.³ B65D *5/42, 31/14*
U.S. Cl. 229—48 R **13 Claims**



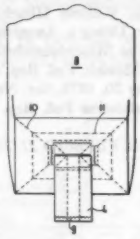
1. A packing container comprising:
a first edge area;
a second edge area overlapped onto the first edge area forming a wall of the packing container;
sealing means for sealing the first edge area to the second edge area disposed on a side of the wall facing the inside of the packing container; and
duct means for venting a space, formed between the sealing means and the wall, towards the outside of the packing container.

4,284,229

RECLOSABLE CROSS-BOTTOM SACK

Horst Schmidt, Kattenvenne, and Hans Struck, Tecklenburg, both of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,998
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840732
Int. Cl.³ B65D *33/38*
U.S. Cl. 229—57 **8 Claims**



1. A reclosable cross-bottom sack comprising:
a tube section having a pulled-open base square closed to form a cross-bottom by folding inwardly and adhering side flaps of the base square;
a base cover sheet applied and adhered to portions of the folded side flaps; and
a flattened tube section having side folds and incisions along outer folded edges at one end thereof that define side flaps, the base cover sheet having an incision formed in a central region thereof with the flattened tube section extending through the incision in the base cover sheet and the side flaps of the flattened tube section being pulled away from each other and secured to the base cover sheet prior to the base cover sheet being applied to the fold side flaps of the tube section, a region of the base cover sheet including the incision and corresponding to the size of the flattened tube section when expanded not being adhered to the cross-bottom.

4,284,230

MAILING ASSEMBLY INCORPORATING PLURAL OFFER SEND AND RETURN MAILING PIECES

Frank L. Schultz, 100 N. Tower Rd., Alamo, Tex. 78516

Filed Jan. 22, 1980, Ser. No. 114,325
Int. Cl.³ B65D *27/06*
U.S. Cl. 229—73 **11 Claims**

1. A mailing assembly designed for initial mailing as an independent mailable unit comprising: a first send and return mailing piece including a first envelope and a first indicia-receptive portion attached to said first envelope; a second send and return mailing piece comprising a second envelope and a second indicia-receptive portion attached to said second envelope, said mailing assembly when in condition for initial mail-

ing having at least parts of each of said first and second portions forming two exterior cover portions between which said envelopes are located, and means initially joining one of said cover portions to the other of said cover portions and allowing for subsequent manual detachment of said first mailing piece from said second mailing piece preparatory to subsequent remailing of at least portions of said first and second mailing pieces as separate mail items.

4,284,231

DEVICE FOR DUCTING GAS IN A CENTRIFUGE BLOCK

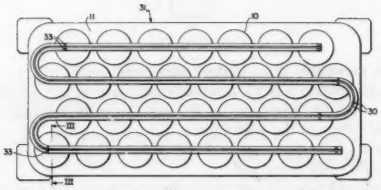
Erwin Maier, Freising; Wilhelm Hirschmann, Friedberg, and Eberhard Willeitner, Utting a. Ammersee, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,806

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824067

Int. Cl.³ B01D *21/26*

U.S. Cl. 233—1 R **6 Claims**



1. A centrifuge block having upper and lower ends and including a plurality of centrifuge housings for a plurality of centrifuges, each centrifuge having a separating chamber with respect to which process gas may flow during use, the centrifuge block comprising:

a plate at said upper end for holding said centrifuge housings, said plate having a plurality of holes for sealingly accommodating said centrifuge housings;

each housing including a cover, each cover being provided with connecting openings for carrying process gas;

each centrifuge having tubes communicating therewith for carrying the process gas, each tube extending from the separating chamber of its associated centrifuge to a connecting opening of its associated cover;

hood means sealingly covering the plurality of centrifuges, said hood means, together with said plate, defining an enclosed space;

said space forming a first duct for the process gas;

said hood means including channel sections forming remaining ducts for the process gas, said channel sections being disposed within said space;

said first and remaining ducts being in communication with said connecting openings.

4,284,232

LIQUID-LIQUID CENTRIFUGAL CONTACTING MACHINES AND METHODS OF CONSTRUCTING AND OPERATING THEM

David B. Todd, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Filed Jul. 13, 1979, Ser. No. 57,420

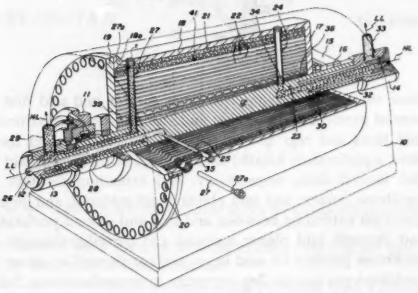
Int. Cl.³ B04B *15/02*

U.S. Cl. 233—15 **16 Claims**

1. In a centrifugal device for contacting at least partially immiscible liquid phases of heavy and light densities wherein there is included a rotor mounting a coaxial hollow casing having an outer cylindrical wall to provide a radially extending rotor chamber therein, the device further including a plurality of concentric radially relatively closely spaced annular partition walls surrounding the shaft which have perforations for the passage of the phases therethrough, and means for removing the heavier phase from the outermost portion of the rotor chamber and the lighter phase from the innermost portion of the rotor chamber, the device further including radially extending light phase inlet passageways extending to have communication with the radially outer portion of the rotor chamber and radially extending heavy phase inlet passageways having communication with the radially inner portion of the rotor chamber, and having means for continuously supplying light and heavy phase fluid to said respective inlet passageways;

the improvement comprising:

providing a pair of concentric radially spaced, annular, axially uniformly, phase distributing trays within the rotor chamber, radially spaced from the shaft and into which the inlet passageways empty, each tray consisting of an annular base wall and radially projecting walls extending therefrom radially oppositely from the other



tray in the form of open-end risers surrounding riser passages through the base wall for flow of the other phase not being dispersed via the tray, the trays, further, in the base wall having much smaller openings relative to said riser passages and perforations in the said partition walls, which in number, in cross-sectional size, and in location are such, considering their distance axially from the particular inlet passageway feeding the tray, that the phase to be dispersed, from one end of the tray to the other, flows through them under pressure of the tray head developed without countercurrent flow of the other phase through them, the riser walls being of at least such radial extent as to collect a sufficient head of the phase to be dispersed via the tray to permit this, considering the inflow rate, the radial positions of the trays, the relative specific gravities of the phases, and the speed of rotation of the rotor chamber; and the riser passages being of such size as to achieve flow of the said other phase through the risers in the continuous phase.

4,284,233

SELF-DUMPING CENTRIFUGAL SEPARATOR DRUM

Otto Külker, Delde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde Westfalen, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,880

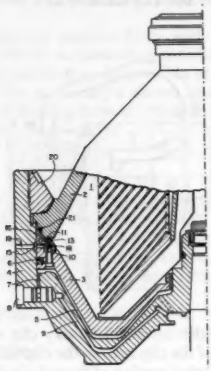
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844917

Int. Cl.³ B04B *11/00*

U.S. Cl. 233—20 A **6 Claims**

1. In a centrifugal separator comprising a drum for the separation of a liquid mass into a heavier fraction and a lighter fraction and collection of the heavier fraction adjacent the drum periphery, ejection aperture means at the drum periphery for ejection of heavier fraction, valve means for opening the aperture means for discharge of heavier fraction from the drum by movement of a valve member from a first position to a second position, and for closing of the aperture means by

movement of the valve member from the second position to the first position, a passageway for receiving heavier fraction from the valve means, the improvement which comprises means for closing said passageway upon arrival of the valve member at said second position, whereby upon movement of the valve member from the first position to the second position,



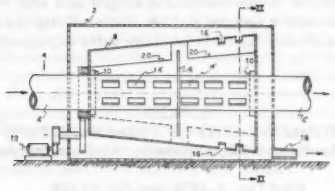
the aperture means is opened, heavier fraction is discharged from the drum and said passageway is closed so that the discharge of heavier fraction is stopped, and upon movement from the second position to the first position the passageway is opened, heavier fraction is discharged from the drum, and said aperture means is closed so that the discharge of heavier fraction is stopped.

4,284,234

CENTRIFUGE

Uriel Rekant, 22/5 Kovlosky St., Kiryat Herzog, Bnei Brak, Israel

Filed Jun. 14, 1979, Ser. No. 48,329
Claims priority, application Israel, Jun. 22, 1978, 54980
Int. Cl.[3] B04B *1/00, 3/00*
U.S. Cl. 233—27 **8 Claims**



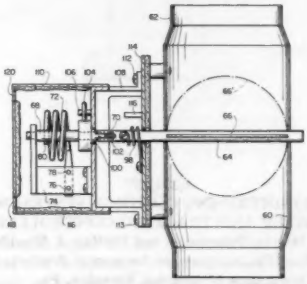
1. A centrifuge for treatment of fluids, comprising a stationary vessel, a stationary pipe passing through said stationary vessel, a baffle disk fixedly mounted on said stationary pipe, a rotating drum mounted on and rotatable about said stationary pipe inside said stationary vessel and divided by said baffle disk into an inlet chamber and an outlet chamber, which outlet chamber is provided with outlet means, further comprising drive means to impart a rotary motion to said drum, wherein said statinary pipe is divided into two mutually sealed-off sections, an inlet section and an outlet section, both of which pipe sections are perforated over that part of their respective length, which is located within said rotating drum, the arrangement being such that upon the introduction of a multicomponent fluid into the inlet section of said stationary pipe, said fluid disperses into the interior of said rotating drum through said perforations in said inlet sections and, being entrained by the inside surfaces of said rotating drum, said fluid is affected by centrifugal forces, due to which forces the heavier components of said fluid are caused to migrate toward the periphery of said drum to exit via said outlet means, while the lighter components of said fluid are displaced toward the perforations of the outlet section of said stationary pipe, through which perforations said lighter components are drawn into said outlet section to be removed therefrom.

4,284,235

VENT CONTROL ARRANGEMENT FOR COMBUSTION APPARATUS

Werner Diermayer, 1275 Panorama Dr., Lafayette, Calif. 94549, and Luitpold Kutzner, Marschnerstrasse 78, D-8000 Munich, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,101
Int. Cl.[3] F23N *3/00*
U.S. Cl. 236—1 G **10 Claims**



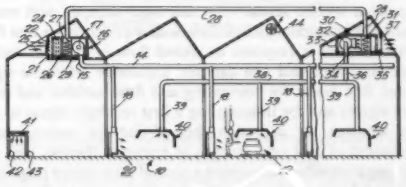
1. In a heating appliance having a damper for controlling the flow of exhaust gases through a vent, the combination of a damper actuating element comprised of a material having a shape memory effect and coupled to apply an actuating force to move the damper between closed and open positions within the vent when the element deforms between first and second shapes, respectively, said element assuming its first shape when at a temperature above its deformation temperature and assuming its second shape when at a temperature below the deformation temperature, and means for heating the element above the deformation temperature for causing deformation of the element toward the first shape and thereby movement of the damper toward its closed position.

4,284,236

AIR CONDITIONING SYSTEM

Norman F. Bradshaw, Richmond, England, assignor to Carrier Drysys Limited, London, England

Filed May 17, 1978, Ser. No. 906,749
Int. Cl.[3] F24F *7/00*
U.S. Cl. 236—49 **5 Claims**



1. An air conditioning system comprising sensor means for monitoring the environment at at least one location, said sensor means being arranged to produce an electrical output signal dependent upon the environment at said location; air delivery means including adjusting means for varying the flow of the air delivered in dependence upon the output signal from the sen-

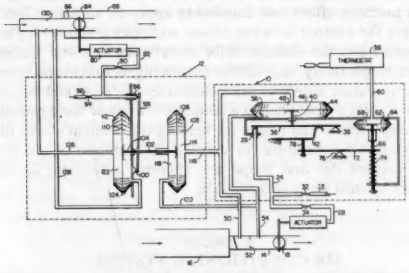
sor means; and a control circuit for said adjusting means, said control circuit comprising a first comparator having a first input connected to the output of said sensor means, a first reference level indicator connected to a second input of the first comparator, and a driver circuit having a first input connected to an output of the first comparator, said control circuit further comprising a rate of change detector connected to the output of said sensor means, a second comparator having a first input connected to the output of said detector, a second reference level indicator connected to a second input of said second comparator, and a direction amplifier connected to an output of the second comparator and to a second input of said driver circuit, said driver circuit being arranged to operate said adjusting means in dependence upon the output signal from said first comparator and the output signal from said direction amplifier.

4,284,237

AIR CONDITIONING CONTROL SYSTEM WITH MASTER AND TRACKING CONTROLLERS

William J. Harris, Tuhannock, and William J. Waeldner, Waverly, both of Pa., assignors to Anemostat Products Div., Dynamics Corporation of America, Scranton, Pa.

Filed May 12, 1980, Ser. No. 148,751
Int. Cl.³ F24F *7/06*
U.S. Cl. 236—49 **8 Claims**



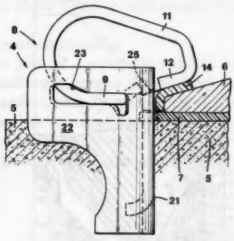
1. In an air conditioning system having at least two duct sections each with an associated damper for regulating air flow therethrough; the combination comprising at least one master controller and an operatively associated first actuator for one damper and at least one tracking controller and an operatively associated second actuator for the other damper, said master controller comprising a first flow sensor producing a first flow variable signal in response to sensed flow in the duct section associated with said one damper, adjustable reference signal means, first means for comparing said flow variable and reference signals and for transmitting a first resultant signal to said first actuator for operation thereof and for corresponding movement of said one damper in response thereto, and said tracking controller comprising a second flow sensor producing a second flow variable signal in response to sensed flow in the duct section associated with the other damper, and second signal comparison and transmitting means for comparing said first and second flow variable signals and for transmitting a second resultant signal to said second actuator for operation thereof and for corresponding movement of said other damper in response thereto.

4,284,238

RAIL FASTENERS

Hendrikus M. Veroef, Gepp's Cross, Australia, assignor to Ralph McKay Limited, Victoria, Australia

Filed Jun. 25, 1979, Ser. No. 51,979
Claims priority, application Australia, Jul. 4, 1978, PD4945
Int. Cl.³ E01B *9/30*
U.S. Cl. 238—349 **2 Claims**



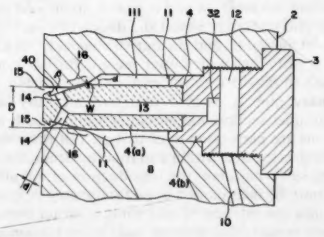
1. A rail clip holder for a rail unitary clip of the kind in which one portion of the clip seats in the clipholder secured to a rail sleeper and another portion of the rail clip lies on the foot of the rail, said clipholder comprising a channel section of plate metal adapted to be disposed vertically when secured to the rail sleeper, said channel section comprising a base having a longitudinal axis and oppositely-directed surfaces and a pair of spaced-apart side portions extending from one of said base surfaces and each terminating in an outer edge spaced from said base surface, said side portions and said base surface defining therebetween a region which is completely empty except for the clip, when said clip is in operative engagement with a rail, the base of said channel section being adapted for location adjacent the foot of the rail with the other base surface disposed toward the rail and a pair of elongated slots, one in each of said side portions of said channel section, each of said slots extending in a direction from the outer edge of the corresponding side portion toward said one base surface and generally perpendicular to said longitudinal axis of said base whereby said slots are disposed substantially horizontally when said channel section is secured to said sleeper and said slots are adapted to receive said one portion of the rail clip and are the sole means of retaining said clip in operative engagement with said rail.

4,284,239

ATOMIZING UNIT OF TWO-PHASE TYPE

Hiroshi Ikeuchi, 2-8-703, Hirata-cho, Ashiya-shi, Hyogo-ken, Japan

Filed Oct. 3, 1979, Ser. No. 81,618
Claims priority, application Japan, Oct. 3, 1978, 53-122155
Int. Cl.³ B05B *7/08*
U.S. Cl. 239—8 **5 Claims**



1. A process for generating a mist of at least one incompressible fluid in an atmosphere of a compressible fluid, comprising:

forming at least two annular flows of the compressible fluid flowing substantially parallel to the longitudinal axis of the annular flow;

forming a low pressure zone in each of said annular flows and drawing the incompressible fluid into said low pressure zones and breaking the incompressible fluid into small fluid particles and entraining the particles in the annular flows;

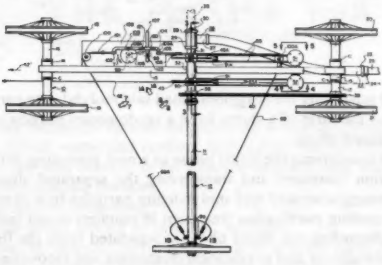
directing said two annular flows with the fluid particles entrained therein to cause them to collide with each other for further breaking up the particles of the incompressible fluid and for producing a stream of mist flowing away from the collision point and in which said further broken up particles are entrained.

4,284,240

WATER PROPELLED PRIME MOVER IN AGRICULTURAL IRRIGATION SYSTEMS

Burr Courtright, Rte. 1, Box 1685, La Grande, Oreg. 97850; Dale E. Olson, 2143 E. Tenth St., Fremont, Nebr. 68025, and Alvin H. Smolkowski, Rte. 3, Box 3190, La Grande, Oreg. 97850

Filed Oct. 6, 1976, Ser. No. 729,994
Int. Cl.[3] B05B *3/18*
U.S. Cl. 239—184 **43 Claims**



1. In an irrigation system for irrigating an area of a field which irrigation system includes a liquid conduit supported by wheels extending over a portion of said area to be irrigated, a drive unit for supplying liquid to said conduit and for rotating said conduit and wheels, said drive unit comprising means allowing movement of said drive unit along a path, means rotatably mounting said conduit to said drive unit for rotation about a generally horizontal axis generally normal to the path of the drive unit, means for rotating said conduit, means for driving said drive unit along the path, and control means for controlling the relative speed of the drive means for said drive unit and said conduit in response to fore and aft relative displacements of said drive unit and said conduit.

4,284,241

SPRAY NOZZLE FOR DISTRIBUTION OF LIQUID WHICH IS INTENDED TO BE AFFIXED TRANSVERSELY TO THE WALL OF A CONDUIT

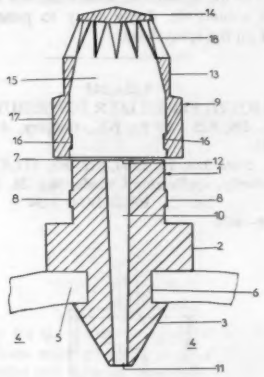
Pierre Azalbert, Paulhac, 31380 Montastruc la Conseillere, France

Filed Oct. 17, 1979, Ser. No. 85,703
Claims priority, application France, Oct. 18, 1978, 78 30132
Int. Cl.[3] B05B *1/14*
U.S. Cl. 239—272 **10 Claims**

1. A spray nozzle for distributing a liquid, said nozzle adapted to be attached to a wall of a liquid delivery conduit of a liquid delivery station or pumping station through a orifice in said wall, said nozzle adapted to expand and deflect said liquid and comprising:

(a) a body having a bottom and a head, a liquid inlet orifice adjacent to said bottom, said orifice adapted to penetrate said conduit, a jet adjacent to said head and a generally conical axial passage gradually flared outwardly in a direction from said orifice to said jet, said passage having the shape of an inverted truncated cone having said orifice at its peak, said orifice having a diameter adapted to prevent undesirable objects from entering said passage; and

(b) a deflector comprising a generally hollow and cylindrical hood adapted to be detachably and securely connected to said body to form a chamber and thereby permit expansion of said liquid therein, said hood blocked at one end thereof and comprising at least one aperture, said hood adapted to deflect liquid radially outwardly from said chamber through said aperture, said hood further including an inner surface with threads and said body having a cylindrical outer surface with complimentary threads so that said hood can be screwed onto said body.

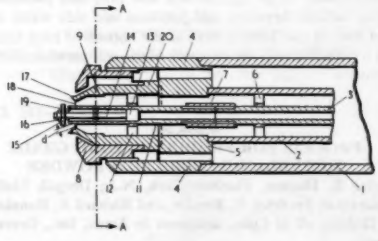


4,284,242

SPRAY HEAD

Arthur A. Randell, Tewkesbury, England, assignor to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 839,295, Oct. 4, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,407
Claims priority, application United Kingdom, Oct. 8, 1976, 41871/76
Int. Cl.[3] B05B *7/06*
U.S. Cl. 239—422 **6 Claims**



1. A spray head for forming a spray of flowable slurry material with a surrounding gas curtain comprising:

a. three concentric apertures comprising a first innermost aperture for discharge of a gas, a second intermediate aperture for discharge of flowable slurry and a third outermost aperture for discharge of gas in a curtain surrounding said slurry discharge;

b. the second intermediate aperture being shaped to direct the slurry discharging therefrom generally downstream;

c. the first innermost aperture having a baffle downstream

thereof, the baffle being so positioned in relation to said first innermost aperture as to direct the gas discharging therefrom radially outwardly toward and to mix with the flow of slurry material;

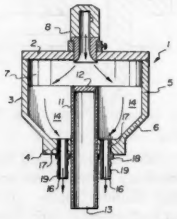
d. the third outermost aperture being located radially outward of the first and second apertures and shaped to direct gas discharging therefrom outwardly at an acute angle relative to the dowstream axial direction so as to form a curtain around the slurry spray to prevent deposition thereof on the spray head.

4,284,243

LIQUID FERTILIZER DISTRIBUTOR

Jim Shaner, 5B, 925 - 30 St. NE., Calgary, Alberta, Canada (T2A 5L4)

Filed Jan. 11, 1980, Ser. No. 111,475
Claims priority, application Canada, Sep. 28, 1979, 336607
Int. Cl.³ B05B *1/14, 1/34*
U.S. Cl. 239—469 **2 Claims**



1. A distributor for a viscous liquid comprising a hollow casing including a side wall defined by a cylindrical upper portion and a frusto-conical lower portion, a top wall and a bottom wall; a plurality of partitions dividing the bottom of the interior of the casing into a plurality of compartments, said partitions extending radially between the longitudinal centre of said casing and said side wall to a level beneath said top wall; a hollow cone spray nozzle in the centre of said top wall for spraying liquid uniformly in a conical pattern, whereby substantially equal quantities of the liquid enter said compartments; an inlet duct for introducing liquid into said nozzle tangentially to promote a spiral action and even distribution of the liquid; a hollow centre post with a closed, planar top end extending through the bottom end of said casing for mounting the distributor on an agricultural machine, said partitions extending radially between said post and said side walls; and an outlet duct in said bottom wall at the bottom of each compartment for discharging the contents of the compartment from the distributor.

4,284,244

PROCESS FOR PRODUCING HIGH GRADE MOLYBDENUM DISULFIDE POWDER

Maurice R. Hoover, Florham Park, N.J.; Deepak Malhotra, Lakewood; Fredrick N. Bender, and Richard A. Ronzio, both of Golden, all of Colo., assignors to Amax, Inc., Greenwich, Conn.

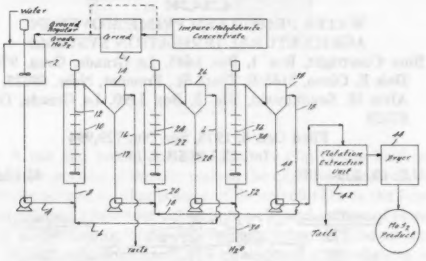
Filed Sep. 19, 1979, Ser. No. 76,866
Int. Cl.³ B02C *23/08*
U.S. Cl. 241—24 **11 Claims**

1. A process for producing a high purity molybdenum disulfide powder which comprises the steps of providing an impure particulated molybdenite concentrate, comminuting said concentrate, if necessary, to reduce its average particle size to a point where plus 99% liberation between gangue and molybdenite particles is obtained adjusting said concentrate if necessary to contain an oily substance in an amount of about 1–10% by weight; subjecting said concentrate comprising oily agglomerates of finely divided smaller molybdenite particles to a plurality of purification treatments each comprising:

(a) forming a mixture of said concentrate with an aqueous solution to provide a solids concentration of about 1% to about 40%.

(b) subjecting said mixture to a high shear agitation to break up the molybdenite particle agglomerates and to release at least a portion of the hydrophilic particulate contaminants mechanically entrapped therein and to effect a suspension of said particulate contaminants in the liquid phase,

(c) introducing the said mixture into a quiescent zone to enable reagglomeration of the molybdenite particles while retaining a substantial portion of the released said particulate contaminants in the liquid phase,



(d) separating the reagglomerated said molybdenite particles in the form of a slurry from a predominant portion of the liquid phase,

(e) transferring the liquid phase to a next preceding purification treatment and transferring the separated slurry of reagglomerated said molybdenite particles to a next succeeding purification treatment in countercurrent fashion;

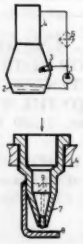
and discarding the liquid phase as separated from the first of the plurality of said purification treatments and recovering the purified agglomerated molybdenum disulfide particles from the slurry separated from the last of the plurality of purification treatments.

4,284,245

MACHINE LUBRICATION SYSTEM

Semyon I. Fishgal, 1908-35 High Park Ave., Toronto, Ontario, Canada (M6P 2R6)

Filed May 1, 1979, Ser. No. 34,906
Int. Cl.³ B02C *19/06*
U.S. Cl. 241—40 **3 Claims**



1. A system for treating a lubricating material comprising a lubricating material reservoir, a lubricating material pressure line, and a means maintaining the working properties of the lubricating material having its inlet connected to said pressure line and its outlets connected to said reservoir, said maintaining means being a comminuting device used for breaking down solid contaminants existing within the lubricating material to a

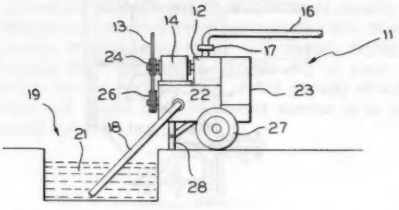
predetermined size, and said comminuting device consisting of a nozzle creating a high speed cavitating jet.

4,284,246

HONEY PIT FERTILIZATION SYSTEM

Carl E. Engle, Fremont, and Don Moldenhauer, Clintonville, both of Wis., assignors to Hydro Ag-Tech Inc., St. Paul, Minn.

Filed Jan. 2, 1979, Ser. No. 3
Int. Cl.³ B02C *18/40*
U.S. Cl. 241—222 **4 Claims**



1. An improved system for pumping a mixture including solid animal waste and resilient herbaceous material from a honey pit, said mixture to be used for fertilizer, said mixture including a liquid portion,

said system comprising:

pump means having an inlet and an outlet;

means to motivate said pump means to provide pump pressure required to move said mixture from said pit;

a conduit insertable into said pit to direct said mixture towards said pump means inlet;

a pulverizer assembly,

said assembly having a cylindrical housing,

said housing of a substantially uniform internal diameter,

said assembly having an inlet and an outlet,

said assembly positioned outside said pit, in the path of flow of said mixture, with said conduit communicating with said assembly inlet, and said assembly outlet communicating with said pump means inlet,

said assembly including a plurality of circular comminuting elements mounted axially within said housing on an axle,

said elements parallel to and spaced apart from each other and from said housing to enable the liquid portion of said contents to flow between said elements to said pump means inlet;

bar means positioned within said housing to impact said solids as said solids are moved by said elements,

said bar means positioned parallel to the axis of rotation of said elements and spaced apart from the outer periphery of said elements by a distance less than that of the size of solids pumpable by said pump,

said assembly inlet and said assembly outlet positioned to direct the flow of said mixture transversely to said elements and said bar means,

said elements contacting said animal waste and herbaceous solids to strike said bar means to reduce said solids to a size selected to allow for passage thereof through said pump means; and

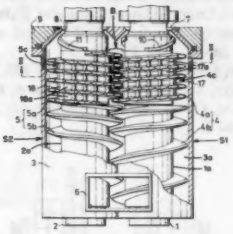
means communicating with said pump means outlet for distributing said contents onto fields for fertilization purposes.

4,284,247

APPARATUS FOR DEFIBRATING AND CONDITIONING NONFLOWABLE CELLULOSIC MATERIAL

Erik F. Eriksson, Ymsenvagen 9, 1 tr., 121 42 Johanneshov, Sweden

Continuation-in-part of Ser. No. 965,813, Dec. 4, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,187
Claims priority, application Sweden, Dec. 6, 1977, 7713845
Int. Cl.³ B02C *18/30*
U.S. Cl. 241—260.1 **20 Claims**



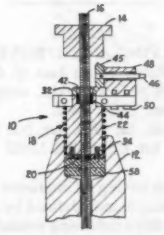
1. Apparatus for the defibration and conditioning of nonflowable cellulosic material comprising a housing having an inlet and an outlet and a flow chamber for cellulose material therebetween; two screws disposed in the chamber and extending from the inlet to the outlet, the screws having interdigitating helical blades with opposed pitches, and helical grooves therebetween interdigitatingly receiving the helical blades of the opposite screws; the screws being arranged for interdigitating rotational movement in opposite directions, so as to defibrate and condition cellulosic material in the bite therebetween while carrying the material through the flow chamber from the inlet towards the outlet; at least a portion of the outer periphery of each helical blade being undulating in a plurality of successive recesses and projections, intermeshing short of contact with a like plurality of projections and recesses defining a land area in the groove of the opposite blade of the other screw, so that within the land areas in the bite of the screws the intermeshing projections of one groove occupy at least part of the recesses in the blade of the other screw, to extend the filled-in area of the blade surface along each screw, for improved screw efficiency in defibration and conditioning of the cellulosic material, and transport of the material through the flow chamber.

4,284,248

PACKING PULVERIZER

Harold R. Adams, Rte. 1, St. Francisville, Ill. 62460

Filed Mar. 26, 1979, Ser. No. 23,847
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—278 R **6 Claims**



1. A packing pulverizer device for removing packing from cup-shaped packing glands having an axial valve stem, said

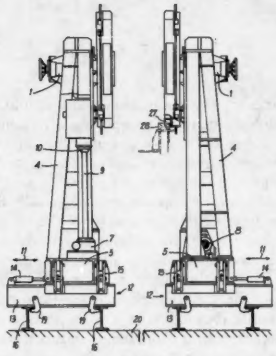
device comprising a cylindrical housing having a central opening for fitting around said valve stem, said housing having a bottom provided with packing comminuting means, flight means on side walls of said housing for carrying comminuting packing from said packing gland and means for rotating said housing, said housing being comprised of a plurality of members adapted to be removably fitted around said valve stem.

4,284,249

DEVICE TO UNROLL AND TO ROLL UP ELONGATED FLEXIBLE ARTICLES SUCH AS CONDUITS OR CABLES

Lucien Legallasi, Orgeval; Guy Planquette, Palaiseau, and Remi Reynard, Neuilly-sur-Seine, all of France, assignors to Coflexip, Rueil Malmaison, France

Filed Mar. 31, 1980, Ser. No. 135,313
Claims priority, application France, Apr. 6, 1979, 79 08774
Int. Cl.³ B65H *75/00;* B21C *47/24*
U.S. Cl. 242—54 R **13 Claims**



1. A system for winding or unwinding lengths of an enlongated flexible article one after the other from a plurality of spools each having an axis and on which a length of the article can be wound or unwound by rotation of a spool about its axis,

at least two of such spools being supported with their axes perpendicular to the direction of the article during unwinding,

at least two opposed spindles forming a winch having an axis generally perpendicular to the direction of the article during unwinding,

means for displacing said spindles in a first direction generally horizontally and perpendicular to an axis of a supported spool;

means for displacing said spindles in a second direction generally horizontally and perpendiculr to said first direction; and

means for displacing said spindles vertically.

4,284,250

TAPE DRIVE HAVING AN IMPROVED REEL LATCH

Ivo T. Plachy, San Mateo, Calif.; Jack W. Clymer, and Richard W. Pembroke, both of Tulsa, Okla., assignors to Telex Computer Products, Inc., Tulsa, Okla.

Filed Mar. 13, 1980, Ser. No. 129,832
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—68.3 **5 Claims**

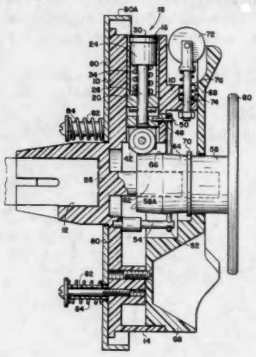
1. A tape drive hub having an improved reel latch for a reel having an axial opening therein defined by an internal cylindrical surface, the tape drive hub being rotatable about its axis for driving the reel, comprising:

(a) a hub body supported for rotation about its axis and having a cylindrical surface of dimension to slidably receive a reel thereon, the body having a plurality of spaced apart, radial openings therein communicating with the hub cylindrical surface;

(b) an actuator received in each said hub body radial opening, each actuator comprising:

(1) cylindrical body slidably received in a hub body radial opening, the cylindrical body having an outer end and an inner end, the outer end having an axial recess therein;

(2) a piston slidably received in said recess in said cylindrical body having a forward end and rearward end, a portion of the piston forward end extending beyond said outer end of said body;



(3) a spring received in said recess in said body urging said piston in the direction towards the cylindrical body outer end; and

(4) means retaining said piston in said recess in said cylindrical body while providing limited axial movement of the piston; and

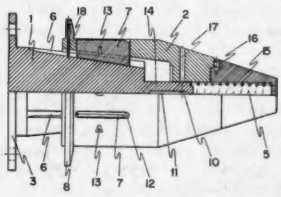
(c) a locking member carried by and axially displaceable to said hub body engaging the inner end of each of said actuators, the locking member having a locking position in which each of said actuators is displaced outwardly.

4,284,251

BEARING FOR SUPPORTING ROLLS OF PAPER

Carmen Salvador Castillo, C/Miramar, 18-8°-31a, Gandia (Valencia), Spain

Filed May 8, 1979, Ser. No. 37,148
Claims priority, application Spain, May 17, 1978, 236.056
Int. Cl.³ B65H *75/24;* B23B *31/40*
U.S. Cl. 242—68.4 **3 Claims**



1. A bearing apparatus for supporting rolls of paper, said rolls of paper being wound on tubular cores, said bearing apparatus comprising:

first and second mounting means spaced opposite each other for mounting a tubular core therebetween, each said first and second mounting means comprising;

a first cone-like shaped member, said first cone-like shaped member being hollow and having an opening at one end and having a plurality of holes spaced along the periphery of the side wall thereof;

a second cone-like shaped member having a shape for being telescopically slidably received in said opening in said first cone-like shaped member for moving between a first fully extended position to a second non-extending position relative to said first cone-like shaped member, said second cone-like shaped member having a flange, extending outwardly therefrom at one end away from another end which is received in said first cone-like shaped member, for being engaged by a means for causing said bearing apparatus to both move reciprocatingly in a horizontal direction and rotate, said second cone-like shaped member having a plurality of channels along the periphery of the outer side wall, each channel located for being in alignment with each hole of said plurality of holes in said first cone-like shaped member;

spring means positioned between said first and second cone-like shaped members for urging said cone-like shaped members apart into said first fully extended position; and

a plurality of plates, each plate of said plurality of plates received and slidable in individual ones of said plurality of channels and extending into a corresponding hole of said plurality of holes, each one of said channels having a tapering depth for causing said plurality of plates to project beyond the outer edge of said plurality of holes when said second cone-like shaped member is in said second non-extending position.

4,284,252

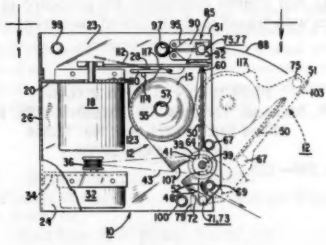
CARTRIDGE FOR STRIP CHART RECORDERS AND METHOD OF USING SAME

Phillip W. King, Cheshire, Conn., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 99,169

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—198 **12 Claims**



6. A strip chart recorder, comprising:

recording means for producing a record on a record medium;

advancing means for moving the record medium past the recording means; and

cartridge securing means for releasably securing a cartridge carrying the record medium;

the cartridge securing means comprising:

support means for supporting a pivoting member of the cartridge such that the cartridge is pivotable into an operative position in the strip chart recorder; and

latch means for engaging a hold member on the cartridge upon pivoting of the cartridge into operative position such that the pivoting member of the cartridge is releasably secured against disengagement with the socket.

4,284,253

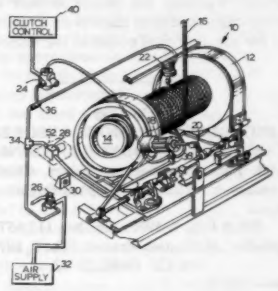
PNEUMATIC BRAKE ACTUATING SYSTEM

Jorge R. Uribe, Caracas, Venezuela

Filed Oct. 1, 1979, Ser. No. 80,190

Int. Cl.³ B66D *1/48*

U.S. Cl. 254—271 **2 Claims**



1. An emergency, manually-initiated override system for pneumatic brake on the hoisting drum in a drilling drawworks, said drawworks having an automatic braking system that includes an air supply, an electrical power supply, a toggle actuated valve in conjunction with the cable and hoisting drum of the drawworks responsive to an extra wrap of cable on the hoisting drum, the system comprising:

a solenoid actuated valve disposed between the air supply of said system and the pneumatic brake of the hoisting drum, said valve normally being in a closed position;

a first electrical switch connected between the electrical power supply and the solenoid of said emergency override valve, said electrical switch being closed to complete the circuit to provide power to the solenoid for opening the pneumatic line; and

a second electrical switching means connected to said first electrical switching means and to said drawworks electrical power supply for disengaging the drawworks power supply from the drawworks.

4,284,254

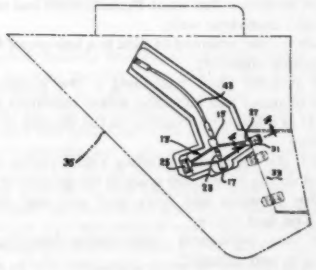
LOW PROFILE PRECISION ACTUATOR

Ralph E. Rieben, Altamont, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 13, 1980, Ser. No. 121,076

Int. Cl.³ B64C *13/24, 13/28*

U.S. Cl. 244—75 R **4 Claims**



1. A low profile precision actuator for use in a wind tunnel test of a high performance model aircraft, said actuator comprising a one-piece metallic rhombus positioned within the wing of the model aircraft, said rhombus having two side

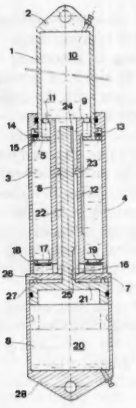
apexes and two end apexes, one of the end apexes of said rhombus being attached to a fixed portion of the model wing, a rotatable drive assembly threadably attached to said rhombus for increasing and decreasing the distance between the side apexes of said rhombus, the other end apex of said rhombus being attached to a moveable aileron on the wing of the model to produce a movement corresponding to the rotation of said drive assembly, whereby the model aircraft can be flown through realistically simulated maneuvers to produce accurate design data for use at critical points in the maneuvering flight envelope.

4,284,255

SHOCK ABSORBERS AND SHOCK ABSORBER STRUTS, NOTABLY FOR AERODYNE LANDING GEAR

Jean Masclet, Paris, and Jacques Veaux, Chatillon, both of France, assignors to Messier-Hispano-Bugatti (SA), Montrouge, France

Filed Feb. 1, 1980, Ser. No. 117,657
Claims priority, application France, Feb. 6, 1979, 79 02965
Int. Cl.³ B64C *25/22*
U.S. Cl. 244—102 R **12 Claims**



1. A suspension shock absorber for the landing gear of an aerodyne, comprising

a cylinder including a first chamber filled with hydraulic fluid and a second chamber containing a gas under pressure and forming a high-pressure elastic return chamber;

said cylinder including a transverse wall separating said first and said second chambers and a sleeve extending along the axial length of said cylinder spaced from an inner wall thereof to form a free space therebetween and connected with said transverse wall;

a separator piston mounted to slide in a leak-proof fashion in said second chamber;

a shock absorber shaft containing a low pressure elastic return chamber and including means mounting said shaft to slide in a leak-proof fashion in the interior of said first chamber;

said shock absorber shaft including a shaft piston at the end thereof sliding in said free space in the interior of said first chamber between said inner wall and said sleeve and guided on said sleeve;

at least one permanent compression-throttling orifice formed in said cylinder;

a grooved shaft connected with said separator piston passing through said transverse wall;

means guiding said grooved shaft in the interior of said sleeve, the base of said sleeve adjacent to said transverse wall having a radial passage larger in section than that of said at least one permanent compression-throttling orifice; and

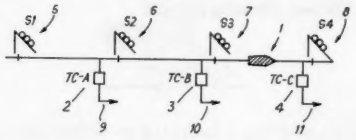
groove means on said grooved shaft displaceable with said separator piston so that in the event of penetration of said shock absorber shaft into said cylinder at a rate very much higher than that for which said at least one permanent compression-throttling orifice is calibrated, said separator piston is displaced in said second chamber against said gas under pressure forming said high pressure elastic return chamber by uncovering said radial passage for the passage therethrough of the hydraulic fluid in said first chamber through said groove means and conditioned for the rate of penetration of said shaft into said cylinder.

4,284,256

SEQUENTIAL CHECKING OF RAILWAY CONTROL SIGNALS

David J. Norton, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Filed May 23, 1979, Ser. No. 41,595
Claims priority, application United Kingdom, May 30, 1978, 24015/78
Int. Cl.³ B61L *27/00*
U.S. Cl. 246—5 **10 Claims**



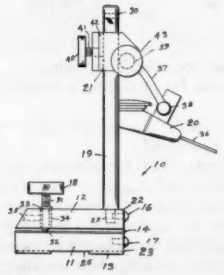
1. Railway control apparatus for generating control signals for controlling a plurality of signalling lamps and change points in a railway system, said apparatus including input means for receiving status signals from a plurality of devices which monitor the railway system, said status signals indicating the operative conditions of the devices, a control set responsive to the indicating signals for generating control commands for governing the movement of a train in the railway system, and control command sequence checking means for checking that control commands are generated in a correct sequence with regard to the indicated movement of the train.

4,284,257

PRECISION SURFACE GAGE

David W. Murkens, 724 Park Ave., Meadville, Pa. 16335

Filed Sep. 5, 1979, Ser. No. 72,364
Int. Cl.³ A47G *29/00*
U.S. Cl. 248—125 **11 Claims**



1. An indicator support comprising,

a bottom base member **(11)** adapted to be supported on a supporting surface,

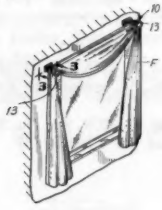
a top base member (12),
said top base member being disposed above said bottom base member,
said bottom base member having means adjacent an edge for attaching the lower edge of a leaf spring thereto,
said top base member having means for attaching the upper edge of said leaf spring thereto whereby said top base member is swingably supported on said bottom base member,
a vertical rod fixed to said top base member and extending upwardly therefrom,
an indicator supported on said rod and slidable vertically thereon,
a threaded screw extending through said top base member and engaging said bottom base member whereby said top base member is swung relative to said bottom base member and said spring is deflected whereby said indicator is swung relative to a vertical line thereby adjusting said position of said dial indicator.

4,284,258

FESTOON SUPPORT DEVICE

Stanley Kleiman, 15 Parson Pl., Colonia, N.J. 07067

Filed Apr. 25, 1979, Ser. No. 24,585
Int. Cl.³ A47H *1/14*
U.S. Cl. 248—251 **6 Claims**



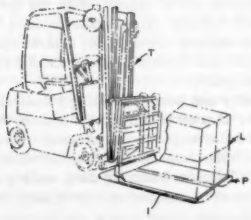
1. A festoon support device comprising a mounting bracket, a forwardly projecting festoon support arm separably coupled at its rear to said mounting bracket, coupling rod coupling means affixed to the rear portion of said support arm and including a forwardly open socket means defined by a lateral U-shaped loop depending from and integrally formed with the rear portion of said festoon support arm for separably receiving a rearwardly directed leg of a curtain rod and an ornament mounted on the front end of said support arm.

4,284,259

REINFORCED PULL SHEET

Matt L. McCaskill, Orlando, Fla., assignor to Alton Box Board Company, Alton, Ill.

Filed Mar. 5, 1979, Ser. No. 17,167
Int. Cl.³ B32B *3/28*; A47B *91/00*
U.S. Cl. 248—346 **2 Claims**



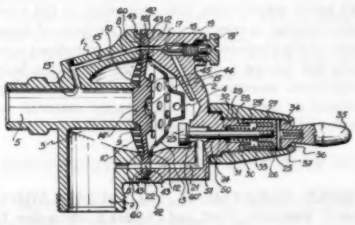
1. A pull sheet for use in aiding in the application or removal of a load on a forklift truck, and for transferring said load laden pull sheet in a multitude of directions after it has been loaded, comprising, said sheet being formed of at least as a double faced corrugated paperboard, said paperboard having a web of medium being interposed between a pair of liners, a reinforcement means for the sheet, said reinforcement means comprising a paper tape of load sustaining material and being located between the medium web and one of the liners in the said paperboard construction, said sheet including three such parallel and spacedly arranged paper tapes as reinforcement, each paper tape being approximately four to eight inches in width and extending the length of said pull sheet, one of said paper tape being aligned approximately with each side edge of the pull sheet, and the third tape extending approximately centrally along the length of said pull sheet, a first fold line formed on the pull sheet and arranged parallel to and a short distance from one edge of the said sheet to facilitate its gripping by the said truck, a second fold line provided upon the pull sheet and arranged parallel to and a short distance from another edge of the said sheet, wherein said first and second fold lines are approximately perpendicularly arranged with respect to each longitudinal other and intersect within their arrangement within the pull sheet structure, a slot formed aligned along one fold line from an edge of the pull sheet and up to the location of intersection with the other fold line to facilitate the independent bending of each fold line without interference from the other said fold line, at least one of said fold lines being provided along the length of a tape, and the other of said fold lines extending across said reinforcing tapes, and said pull sheet having dimensions to provide for its accommodation onto the fork lift of a truck, with the width and length dimensions of said pull sheet approximating respectively three to five feet.

4,284,260

AUTOMATIC DISCHARGE VALVE FOR LIQUIDS

Nicolas Baranoff, Arenales St. 2636, 1602 Florida (Province of Buenos Aires), Argentina

Filed Sep. 12, 1978, Ser. No. 941,844
Claims priority, application Argentina, Sep. 15, 1977, 269209; Sep. 15, 1977, 269210
Int. Cl.³ F16K *31/145*
U.S. Cl. 251—45 **7 Claims**



1. In an automatically discharged valve for liquids, comprising a first housing portion, a second housing portion, and a circular diaphragm, having a central sealing portion, therebetween, said first and second housing portions being made of rigid materials and said diaphragm being made of elastomeric material, wherein said first housing portion includes concentric intake and discharge pipes, said intake pipe being sealable by said central portion of said diaphragm and said intake and discharge pipes communicating with a first hollow space when said diaphragm does not seal said intake pipe, and wherein said second housing portion includes a second hollow space therein on the side of said diaphragm opposite said first hollow space, the valve further including first channel means, crossing a peripheral zone of said diaphragm, for intercommunicating said second hollow space and said intake pipe; a flow restrictor within said first channel means; second channel means, crossing a peripheral zone of said diaphragm, for intercommunicat-

ing said second hollow space and said discharge pipe; and sealing means for releasably sealing said second channel means from said second hollow space, said sealing means including a sealing plug at least the sealing surface of which being made of elastomeric material, a piston connected to said sealing plug, a guide channel in said second housing portion in which said piston is guided, and externally actuatable release means connected to said piston for causing said plug to move between sealing and non-sealing positions, wherein said guide channel has a first portion having a first cross-sectional area, intercommunicating said second hollow space and said second channel means when said plug is not in the sealing position, and a second portion, of cross-sectional area smaller than said first cross-sectional area, surrounding the remainder of said piston, the improvements wherein:

(a) said first channel means has a first span, in communication with said intake pipe, forming an angle of greater that 90° with the direction of liquid flow in said intake pipe, when the valve is open in use, thereby directing the liquid upstream, and a second portion intercommunicating said first span and said second hollow space, whereby the probability of any particles in the liquid flow entering said first channel means is substantially diminished;

(b) the end of said first portion of said guide channel of said sealing means, opposite the end opening into said second hollow space, has the shape of a truncated cone, the smaller basis of which is closer to said end opening into said second hollow space, whereby any leakage through said second portion of said guide means is substantially eliminated;

(c) said diaphragm has a peripheral flat circumferential edge which is sealed between said first and second housing portions and having passages therein for said first and second channel means, the zones of said circumferential edge surrounding said passages having slight thickenings, and a portion, between said central sealing portion and said peripheral edge, in the shape of the shell of a truncated cone, and wherein said central sealing portion comprises a central thickening having the shape of a truncated cone on the side facing said intake pipe and a concavity surrounded by a reinforcement ring on the opposite side, whereby improved sealing and seating of the diaphragm is obtained; and

(d) all zones surrounding holes provided in flat surfaces of rigid material in contact with flat surfaces of elastomeric material are provided with annular projections concentric with, but having a diameter larger than, the holes, said projections emerging from either the surface of rigid material or the surface of elastomeric material, whereby improved sealing at said zones is obtained.

4,284,261

STROKE ADJUSTMENT FOR VACUUM MOTOR

Benjamin C. Benjamin, Flint, and Charles A. Detweiler, Durand, both of Mich., assignors to Schmelzer Corporation, Flint, Mich.

Filed Jul. 23, 1979, Ser. No. 59,997
Int. Cl.³ F16K *31/126;* F15B *15/24*
U.S. Cl. 251—60 **9 Claims**

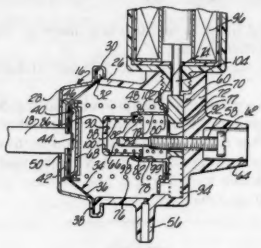
1. A vacuum motor for controling a carburetor choke valve comprising:

a housing, a movable wall forming a control chamber in said housing at one side of said movable wall, an output member connected to the other side of said movable wall and to a carburetor choke valve, said wall being movable in response to vacuum pressure in said control chamber to move said output member and choke valve toward an open position,

stop means formed in said housing and being engageable with said wall to limit movement of said wall and determine the length of stroke of said output member,

stroke modifying means movable to a first position between said stop means and said wall to limit movement of said wall to a first predetermined position,

said stroke modifying means being movable transversely of the direction of movement of said movable wall between said first position and a second position in which said stroke modifying means is disposed to one side of said stop means,



means biasing said stroke modifying means toward said second position, and

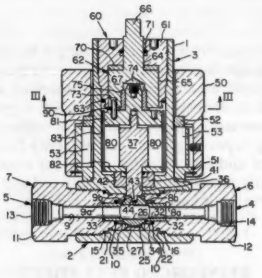
control means operable to maintain said stroke modifying means in said second position to permit movement of said movable wall to a second predetermined position to move said choke valve to a more fully open position.

4,284,262

MAGNETICALLY ACTUATED STOPPER VALVE

Robert F. Ruyak, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed May 17, 1979, Ser. No. 39,900
Int. Cl.³ F16K *31/08*
U.S. Cl. 251—65 **16 Claims**



1. A valve comprising

a pressurizable valve body having two fluid passages and a central space between said passages,

a rotatable stopper positioned within said central space having an opening therethrough which may be brought into registry or out of registry with the fluid passages,

a nonmagnetic tubular pressurizable bonnet having an extended axis passing through the central space and rotatable stopper, said bonnet having a closed end away from the central space,

said valve body and bonnet defining a central opening connecting the interior of the bonnet and the central space,

a cylindrical drive magnet holder coaxial with and surrounding said tubular bonnet, said holder mounted rotatably thereto, said holder carrying rare earth cobalt magnets defining an even number of north and south magnetic poles,

a rotatable control shaft projecting through said central opening, said shaft engaging said stopper such that turning

the shaft turns the stopper, said shaft having mounted thereto driven magnet assembly comprising rare earth cobalt magnets defining an equal number of north and south magnetic poles such that when the cylindrical holder is turned, the driven magnet assembly and control shaft will follow,

the control shaft and mounted driven magnet assembly being rotationally supported in the bonnet substantially coaxial therewith by thrust bearings to resist the axial movement of the shaft,

valve seats associated with each fluid passage in said valve body and being hollow cylindrical shapes coaxial with said fluid passages, said seats having axial ends shaped to sealably engage said stopper, means for securing each valve seat against the said stopper, and

an independent means for direct mechanical actuation of said control shaft and driven magnet assembly such that the control shaft and driven magnet assembly freely turn through about 90° by magnetic actuation without interference by said independent means.

4,284,263

TEMPERATURE-COMPENSATED CONTROL VALVE

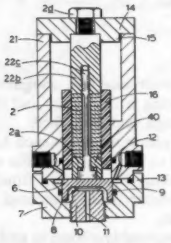
Clive V. Newcomb, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,617

Claims priority, application United Kingdom, May 8, 1978, 18209/78

Int. Cl.³ F16K *31/02*

U.S. Cl. 251—129 **3 Claims**



1. A temperature-compensated control valve comprising an actuating member having a fixed end and a free end, including an elongate piezoelectric element arranged in a longitudinal direction; a housing surrounding the actuating member and having a closed end connected to said fixed end, and a seat end; an inlet duct and an outlet duct; a movable body arranged to control communication between said ducts responsive to reciprocation of the body longitudinally with respect to said seat end; and means for reciprocating the movable body responsive to movement of the free end of the actuating member,

wherein between said closed end and said seat end the housing has a coefficient of thermal expansion greater than the coefficient of thermal expansion of said piezoelectric element, and said member comprises a spacer arranged longitudinally at one end of the element, and formed of a non-piezoelectric material having a coefficient of thermal expansion greater than the coefficients of thermal expansion of the housing and piezoelectric element, the length of composition of the spacer being selected such that the actuating member has a coefficient of expansion equal to that of the housing.

4,284,264

BUTTERFLY VALVES

Folke H. Hubertson, Säffle, Sweden, assignor to Aktiebolaget Somas Ventiler, Säffle, Sweden

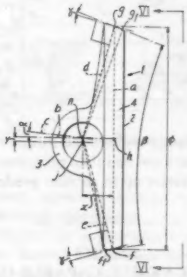
Filed Jun. 17, 1980, Ser. No. 160,148

Claims priority, application Sweden, Jan. 17, 1980, 8000318

The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.³ F16K *1/22*

U.S. Cl. 251—305 **8 Claims**



1. Butterfly valve comprising a valve housing including a valve seat and a throttle arranged to be turned around a stem going through the valve housing between an open position and a shut-off position in which a seal face on the throttle is pressed against the seat in the valve housing, the seal face having two opposite, essentially spherical shapéd sections intersected by a symmetry plane through the throttle coinciding with the torsional axis of the throttle, and two essentially conically shaped sections on each side of said symmetry plane between the two essentially spherical shaped sections, the essentially spherical and the essentially conical sections successively merging into each other, a curve around the circumference of the throttle having essentially the shape of a circle, and being the sealing line of the throttle said sealing line defining approximately a plane which is offset from said torsional axis, and a seat which is displaceable in the plane thereof so that the seat when the throttle is pressed against same essentially without sliding can adopt itself to the shape of said essentially circular curve extending around the circumference of the sealing face, and said seat can also adopt a proper orientation in the plane of said curve.

4,284,265

DUAL DRIVE SYSTEM FOR DRAGLINE WITH POWER INTERLOCK

James G. Morrow, Sr., Manitowoc, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

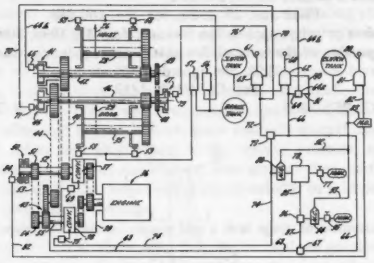
Continuation-in-part of Ser. No. 18,106, Mar. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 835,871, Sep. 23, 1977, Pat. No. 4,143,856. This application Dec. 3, 1979, Ser. No. 99,916

Int. Cl.³ B66D *1/26*

U.S. Cl. 254—317 **12 Claims**

1. A split drive system for a dragline having a hoist drum and a drag drum comprising, in combination, a power source, means including a first torque converter having an output shaft and a first selectively engageable clutch for interconnecting said power source and said hoist drum, means including a second torque converter having an output shaft and a second selectively engageable clutch for interconnecting said power source and said drag drum, power interlock control means for selectively coupling said output shafts together, hoist control means movable in one direction for engaging said first clutch and for modulating said first and second torque converters, drag control means movable in one direction for engaging said

second clutch and for modulating said second torque converter, control means for automatically rendenering said drag control means operative when moved in said one direction for



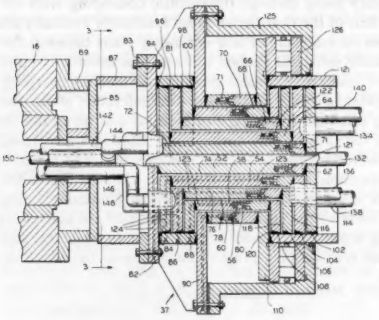
progressively modulating said second torque converter up to a predetermined output level and then progressively modulating said first torque converter up to another predetermined output level.

4,284,266

METALLURGICAL VESSEL CAPABLE OF RECEIVING FLUIDS IN SEPARATE FLOW PATHS WHILE PIVOTING

Rashed N. Nagati, Mars, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1980, Ser. No. 131,255
Int. Cl.³ C21C *5/50*
U.S. Cl. 266—246 **12 Claims**



1. A metallurgical vessel having a plurality of tuyeres extending therethrough,

a trunnion support coupled to said vessel and a plurality of trunnion pin means extending from said support for being rotated to tilt the vesssel about a generally horizontal axis, one of said trunnion pin means having an axial opening formed therein,

rotary joint means including first and second portions,

the first portion of said rotary joint means including a plurality of concentric, annular members spaced apart radially from each other and affixed to said one trunnion pin means for rotation therewith,

the gaps between said plurality of members defining a plurality of axially extending and radially spaced apart flow passages,

the second portion of said rotary joint means including means for closing said plurality of flow passages and being in a relative rotary sealed relation to said first portion,

a first plurality of passageway means formed in said first rotary portion means and extending at an angle relative to said tilt axis,

each of said first plurality of passageway means being connected to a different one of the passages of flow passages,

a first plurality of pipe means, each pipe means of said first plurality being connected to a different one of said first plurality of passageway means and extending toward said trunnion pin means, said pipe means converging toward said tilt axis for passing individually through the axial opening in said trunnion pin means, at least some of said first plurality of pipe means being connected to said tuyere means,

a second plurality of passageway means formed in said second rotary joint portion and each being in communication with a different one of said first plurality of flow passages,

a second plurality of pipe means, each pipe means of said second plurality being connected to a different one of said passageway means,

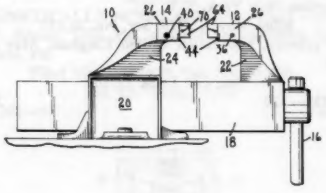
whereby each of said second plurality of passageways may be connected to a different source of process fluid for said vessel.

4,284,267

VARIABLE CONTOUR VICE JAW

Ronald D. Marben, 1101 E. 132nd St., Burnsville, Minn. 55337, assignor to Dennis M. Thayer; Ronald D. Marben; Ralph DeJarlais and Edward DeJarlais, all of Minneapolis, Minn.

Filed Mar. 26, 1980, Ser. No. 134,077
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—266 **18 Claims**



1. A variable contour vice jaw, comprising:

(a) a housing having a front face and a plurality of bores extending through said front face;

(b) a plurality of piston members each having first and second ends, sized to be received within said bores with said first end extending through said front face, a portion of each piston member being truncated, between said first and second ends;

(c) stop means removeably affixed to said housing for engaging said end point of said truncated portion whereby said piston members are prevented from sliding out of said bores; and

(d) means for interconnecting said bores to provide a closed hydraulic system in operative relationship with said piston members; and

(e) means for injecting fluid into said hydraulic system.

4,284,268

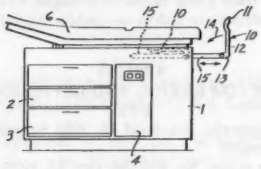
PATIENT SUPPORT TABLE WITH ADJUSTABLE STIRRUPS

Robert O. Gauthier, Two Rivers, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 17, 1979, Ser. No. 67,597
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—328 **16 Claims**

1. A patient support table wherein the improvement comprises: a pair of swivel supports that can independently swivel in a generally horizontal direction; a limb support bar connected to each swivel support at a longitudinally sliding joint; a limb receiver secured at a fixed location to each limb support bar; and wedge means on each swivel support for longitudi-

nally adjusting the effective length of the limb support bar; and a swivel lock on the table slidingly receiving each bar with sufficient clearance to permit a wedging action between the



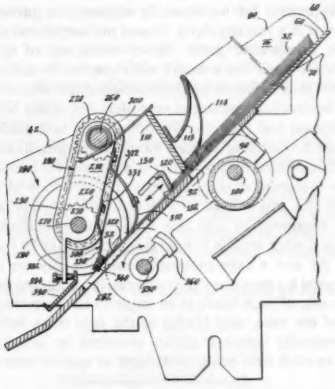
bar and swivel support, whereby the bar is locked against both longitudinal and swivel motion when a patient's limb is placed on the limb receiver.

4,284,269

DOCUMENT FEEDER FOR DOCUMENT-HANDLING MACHINE

Vladimir Ignatjev, Norwalk, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 27, 1979, Ser. No. 52,501
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—122 **10 Claims**



1. Document-feeding apparatus comprising

a tray for supporting a stack of documents for processing, said tray having a top surface and a bottom surface and a long axis,

a first roller disposed adjacent to the top surface of said tray, and a second roller disposed adjacent to the bottom surface of said tray, said rollers being mounted for rotation in a plane parallel to said long axis,

said rollers being mounted in operative relation with each other and positioned so that, over at least a portion of their paths of rotation, they contact each other through an opening in said tray, the surface of said second roller having a greater coefficient of friction than the surface of said first roller whereby, when said rollers contact each other, said second roller causes the document at the bottom of the stack to feed between the rollers to an operating station,

said first roller being part of an assembly which includes support means freely rotatable on a first shaft disposed transverse to said tray, said first roller being coupled to and rotated by said shaft,

a generally U-shaped bracket mounted adjacent to said first roller assembly, and

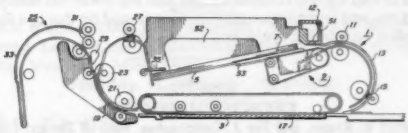
a shock absorber comprising a rubber strip securely seated in said U-shaped bracket and having an end secured to said assembly whereby any mechanical shocks suffered by said assembly are absorbed by said rubber strip.

4,284,270

STACK FOR BOTTOM SHEET FEEDER

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,596
Int. Cl.³ B65H *1/24, 3/12*
U.S. Cl. 271—166 **4 Claims**



1. A bottom sheet separator-feeder for separating and forwarding sheets seriatim comprising;

a stack tray adapted for supporting a stack of sheets to be fed, said tray having a depressed pocket formed therein such that the major portion of the stack weight is supported by the edge portions of said pocket to provide a seal between the sheets and the edge portions of said pocket;

vacuum feed means disposed beneath said tray adapted to pull the bottom sheet in the stack into said pocket and feed the sheet from beneath the sheet stack; and,

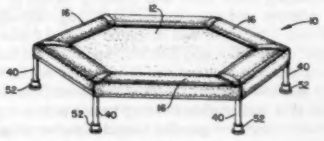
air injection means disposed adjacent the front of said tray to inject air between the bottom sheet in the stack on said tray and between adjacent sheets in the stack, movement of the bottom sheet in the stack into said pocket by said vacuum feed means causing a pocket shaped depression in the bottom sheet, thereby providing a space between the bottom sheet and the remainder of the stack for receiving air from said air injection means to provide improved air flow over the top of the bottom sheet to support the remainder of the stack spaced from the bottom sheet.

4,284,271

HEXAGONAL JOGGING PLATFORM

John E. Pettit, 18219 - 46th Pl. South, Seattle, Wash. 98188, and Thomas L. Pettit, 12112 52nd Ave. East, Tacoma, Wash. 98446

Filed Mar. 15, 1979, Ser. No. 20,739
Int. Cl.³ A63B *23/04, 5/18*
U.S. Cl. 272—70 **1 Claim**



1. A hexagonal jogging platform comprising: a generally hexagonally shaped, horizontally disposed frame; a flat, hexagonally shaped bed of flexible material disposed concentrically within said frame and having margins thereabout spaced from said frame; a series of spring means under tension interconnecting said bed margins and frame along the six sides thereof, respectively; leg support means depending from said frame at the six angles thereof; and hexagonally shaped pad means overlying and covering said spring means between said frame and bed margins; said frame being shaped to have external, rounded corners thereon at each of the six angles thereof and being of integral, one-piece construction; said series of spring

means comprising six sets of six equispaced coil springs, each of said coil springs having integral hooked attaching ends thereon, each hooked end being bent from said coil spring at a point coincident with a central axis defined centrally through the coil of said coil spring whereby load is applied to said coil spring evenly and centrally therealong to prolong spring life; each of said support leg means comprising a tubular leg, means threadably detachably interconnecting said frame and leg, means defining a lateral bore through said leg for matingly receiving a hand held tool for rotating said leg, a protective tip fitted onto and over a lower end of said leg, and a flat circular insert within said tip having an external diameter the same as that of said leg and retained against said leg lower end solely by said tip, said insert preventing damage to said tip due to a force applied by said leg lower end therewithin.

4,284,272

EXERCISE MACHINES

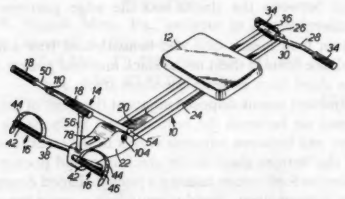
Harold R. Evans, and Ian J. Cunnington, both of Jersey, Channel Islands, assignors to Tekron Licensing B.V., De Leersum, Netherlands

Filed Feb. 9, 1979, Ser. No. 10,615

Claims priority, application United Kingdom, Feb. 10, 1978, 5499/78; Aug. 7, 1978, 32501/78; Aug. 7, 1978, 32506/78

Int. Cl.[3] A63B *69/06*

U.S. Cl. 272—72 **4 Claims**



1. In an exercise machine comprising a frame, a foot rest and a seat, both mounted on the said frame in such a way that the said seat is movable generally horizontally longitudinally towards and away from said foot rest, a stem bar, a handle mounted in the vicinity of the upper end of said stem bar, means for connecting said stem bar at its lower end to said frame for moving said handle along an arcuate path in an upright longitudinally extending plane, wherein at a position intermediate the ends of the arcuate path said handle lies at a level substantially higher than the level of said foot rest and said seat, and resisting means for opposing movement of said handle away from said foot rest, the improvement comprising:

flexible elongate tension-bearing means for interconnecting said resisting means and said stem bar and for transmitting the resisting force from said resisting means to said stem bar, wherein said resisting means is longitudinally spaced from said lower end and mounted to said frame substantially at the level of said foot rest, and wherein said tension bearing element is connected to said stem bar between said upper and lower ends at a distance spaced from said lower end so that said tension-bearing means acts in a generally horizontal direction parallel to said stem bar as said handle approaches the end of said arcuate path upon movement away from said foot rest so as to reduce the force exerted by said resistance means in opposition to movement of said handle;

wherein said resisting means comprises a flexible elongate friction element connected to said elongate flexible tension-bearing means for movement with said handle; biasing means acting on said flexible friction element for urging said handle toward said foot rest, and means for guiding said flexible friction element for producing substantial frictional resistance to movement of said flexible friction element and thereby said handle when said handle is pulled away from said foot rest in opposition to said biasing means, thereby creating increased tension in said flexible tension element, and for producing relatively little frictional resistance to movement of said friction element when said handle moves toward said foot rest and said tension is reduced, wherein the guiding means comprises a series of fixed guide elements arranged to constrain said friction element to follow an undulating path.

4,284,273

APPARATUS FOR RAKING AND LEVELLING SAND IN A PIT

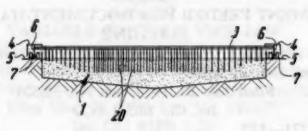
Otto H. J. Gansewig, Tegelkuhl 10, 2053 Schwarzenbek, Fed. Rep. of Germany

Continuation of Ser. No. 846,130, Oct. 27, 1979, abandoned, which is a continuation of Ser. No. 619,252, Oct. 3, 1975, abandoned. This application Jan. 3, 1980, Ser. No. 109,453

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1974, 2448830

Int. Cl.[3] A63B *5/00*

U.S. Cl. 272—101 **4 Claims**



1. Apparatus for horizontally aligning the surface of sand contained in a rectangularly shaped pit, particularly of a jumping pit, comprising guide means composed of two parallel elements aligned horizontally with respect to each other, said elements positioned on opposite longitudinal sides of said pit, a frame horizontally mounted on rollers extending between said guide means and reciprocally movable on said guide means, a perforated skimming device mounted longitudinally on said frame constituted by a plurality of sections wherein at least one section is aligned at right angles to the direction of movement of the frame and at least two sections are arranged at an angle to the alignment of said one section, said sections having a horizontal edge section converging into a ridge to contact sand in the pit and a rake mounted longitudinally on said frame constituted by two rows of transversely staggered blades with a wide side of each blade at an angle to the direction of movement of the rake, said blades of the two rows being aligned with mutually opposite angles mounted on said frame, said blades in each row being positioned at spaced intervals.

4,284,274

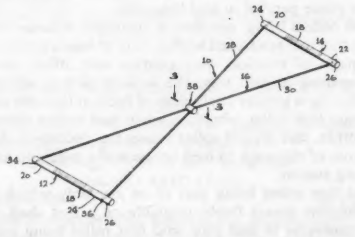
EXERCISE DEVICE

Nathaniel L. Boothe, 7004 Batavia Way, Riverside, Calif. 92503

Filed Dec. 7, 1979, Ser. No. 101,260

Int. Cl.[3] A63B *21/28*

U.S. Cl. 272—116 **7 Claims**



1. An exercise device comprising:

first and second bars, each of said bars having a grip area dimensioned to be grasped by two human hands adjacent each other;

a tension member comprising first and second cords each having a respective pair of cord ends, said cords being secured at their said ends to said bars; and

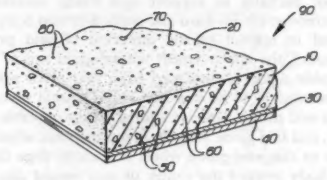
lock means for locking said cords together intermediate their ends for preventing relative longitudinal motion of said cords.

4,284,275

POLYURETHANE GRIPPING MATERIAL

Herbert E. Fletcher, 34807 Calle Del Sol, Capistrano Beach, Calif. 92624

Filed Oct. 11, 1979, Ser. No. 83,572
Int. Cl.³ B29D *27/04*
U.S. Cl. 273—75 **7 Claims**



1. A method of producing a sheet of flexible resin gripping material having a plurality of pores in the surface thereof comprising the steps of:

a. forming a sheet of hardenable resin material;

b. sprinkling said sheet while it is in a softened state with a granular substance of the general size and configuration of ordinary table salt;

c. allowing said sheet to harden;

d. removing a portion of the upper surface of said sheet, thereby exposing some of said granules and forming a smooth upper surface;

e. removing said exposed granules, thereby forming a plurality of pores in the surface of said sheet, wherein said pores are of the general size and configuration of ordinary table salt so as to act as suction devices when in contact with skin.

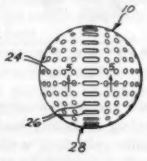
7. A handle covered with the material formed by the method of claim 1.

4,284,276

GROOVED GOLF BALL

Joseph C. Worst, 3606 Nandina Dr., Louisville, Ky. 40222

Filed Feb. 13, 1980, Ser. No. 121,030
Int. Cl.³ A63b *37/14*
U.S. Cl. 273—232 **14 Claims**



1. A golf ball in the shape of a sphere having in its outer surface a plurality of spaced dimples which substantially cover the outer surface, the invention comprising:

a. at least one elongated groove on the outer surface of the ball which encompasses at least two of the said dimples for use in interlocking with the striking face of a golf club;

b. the groove having a transverse width dimension substantially the same as the width of a dimple;

c. the groove having a generally uniform transverse cross section substantially the same as the transverse cross section of a dimple;

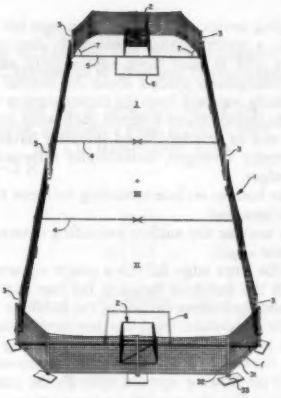
d. the groove having reduced ends.

4,284,277

KICK BALL GAME AND APPARATUS KIT THEREFOR

David J. Leonard, and Lanita Leonard, both of 5520 S. Sheridan Rd., Muskegon, Mich. 49444

Filed Sep. 11, 1978, Ser. No. 941,306
Int. Cl.³ G09B *71/02*
U.S. Cl. 273—411 **3 Claims**



1. A kickball game, to be played by opposing teams, including a substantially closed playing surface bounded on all sides by a fence like barrier, the improvement comprising,

said fence like barrier being portable and including a plurality of vertical poles any adjacent two of which define a barrier section, and a net member comprising a flexible fabric like material in sheet form,

attachment means on said poles for detachably securing said net member thereto at spaced intervals along the length of each of said poles,

base portions for said poles,

each of said poles being detachably secured to a respective base portion and while secured thereto being in fixed vertical position,

each of said base portions being substantially flat on at least the ground surface thereof and being of sufficient square surface area and weight to support a respective one of said poles,

said poles being attached to said respective base portions at an edge thereof whereby the base portion is outside the said playing surface entirely.

said net member being a one quarter inch synthetic polymer fabric of open mesh construction and the mesh size being approximately two inches square such that the net member weight and degree of resiliency is sufficient to keep a ball in play following impact therewith at any angle, said net member being approximately four feet high and extending upwardly the full height thereof along each of said poles beginning approximately at the juncture of each of said poles and a respective base portion.

4,284,278

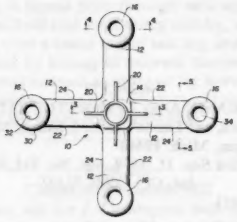
FLYING TOY

Joseph Bradford, 11145 Cyprus Glenn Ave., Baton Rouge, La. 70807

Filed Mar. 18, 1980, Ser. No. 131,319

Int. Cl.³ A63B *65/08*

U.S. Cl. 273—426 **5 Claims**



1. In a flying device of the boomerang type having a central vertical axis, a center portion symetrically disposed about the central axis, and at least three substantially identical wing portions equiangularly spaced about the central axis and extending radially outward from the center portion in a horizontal plane, the improvement wherein each wing portion carries at its outer end an annular-shaped stabilizer having:

concentrically arranged, horizontally disposed, inner and outer edges,

an annular bottom surface extending between the inner and outer edges; and

a convex annular top surface extending between the inner and outer edges;

wherein the inner edge defines a center opening extending through the stabilizer between the top and bottom surfaces, and the bottom surface of the stabilizer deviates less than the topsurface from the horizontal plane of outer edge in a vertical direction, whereby, during flight of the device, the stabilizer acts as an airfoil to provide additional lift, and air flowing upward through the center opening acts to stabilize the adjoining wing portion.

4,284,279

PHONOGRAPH RECORD PLAYER

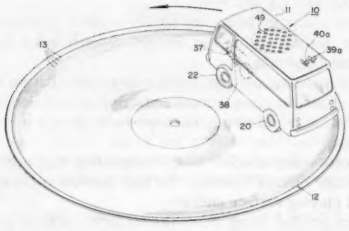
Yoshihisa Mori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 14, 1980, Ser. No. 121,508

Claims priority, application Japan, Feb. 21, 1979, 54/20186[U]

Int. Cl.³ G11B *3/02, 25/04*

U.S. Cl. 369—63 **8 Claims**



1. A record player for use on a stationary phonograph record disc having a surface on which signals are recorded in a spiral sound groove comprising:

a freely movable body adapted to be steerably supported on said surface of the record disc for random movement in respect to the latter;

drive means operatively associated with said randomly movable body for propelling the same relative to said surface of the record disc;

sound pickup means associated with said freely movable body for reproducing the signals recorded in said groove as said freely movable body is propelled; and

a guide assembly mounted on said freely movable body for guiding the same in a generally circular path along said sound groove, including:

a support member pivotally mounted on said freely movable body for pivotal motion relative to the latter about a pivot axis on said body,

a guide member mounted on said support member to engage said sound groove and to control the direction of propulsion of said freely movable body, and

a guide wheel mounted on said support member for rotation about an axis so as to roll on the record disc and at least partially to support said freely movable body thereon at the forward end portion of said body considered in respect to the direction of said propelling thereof, the improvement wherein said axis of rotation of said guide wheel is displaced from said pivot axis of the support member as to be disposed ahead of said pivot axis in respect to said direction in which the freely movable body is propelled, and said guide member is also disposed ahead of said pivot axis so that said guide wheel is made to urge the freely movable body toward the center of said record disc as said body is propelled along said groove and a reaction on said guide wheel urges said guide member toward said center to compensate for centrifugal forces tending to disengage said guide member from said groove.

4,284,280

SEALING FOR MACHINE ELEMENTS WHICH MOVE BACK AND FORTH

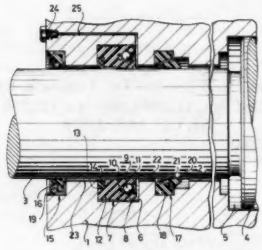
Claus Bertram, Waltrop, and Georg M. Lorenz, Königstein, both of Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft and Lorenz GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,481

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845920

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—27 **6 Claims**



1. In a sealing for back and forth moving machine elements, particularly for the sealing of axially back and forth moving piston rods for hydraulic cylinders, with a seal which seals against a housing as well as against the axially back and forth moving piston rod, an additional sealing protection element arranged between the seal and the oil pressure chamber of the cylinder, and a stripper turned toward the atmosphere, the improvement wherein

the additional sealing protection element comprises a preceding protection element formed with a lip, said lip being directed toward said oil pressure chamber,

the seal constitutes a lip seal, the latter in cooperation with and between the piston rod, the housing and said preceding protection element define another oil chamber,

said back and forth moving piston rod and said housing constitute relatively moveable elements,

said lip of said preceding protection element contacts one of said relatively moveable elements and is formed with openings, said openings form a connection between said pressure oil chamber and said another oil chamber between said preceding protection element and said lip seal.

4,284,281

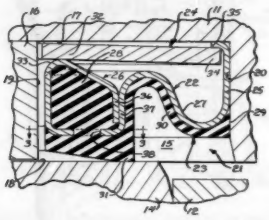
JOINT SEALING STRUCTURE

Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 19, 1980, Ser. No. 174,391

Int. Cl.³ F16J *15/32, 15/36*

U.S. Cl. 277—84 **10 Claims**



1. In a joint **(10)** including a first member **(11)** defining a cylindrical axially outwardly opening recess **(15)** having an axially outer surface **(17)** and a radially inner, circumferential surface **(20)**, a second member **(14)** adjacent said first member and defining a sealing surface **(18)** confronting said recess, said members being associated to have relative rotational movement about the axis of the recess and relative movement toward and from each other along said axis, an improved sealing structure **(21)** in said recess movably sealing said members, comprising:

an annular seal **(23)** having a radially outer base portion **(29)** received coaxially in said recess **(15)**, an annular sealing portion **(28)** defining a lip **(31)** sealingly engaging said confronting sealing surface **(18)**, and a flexible connecting portion **(30)** extending between said base portion **(29)** and sealing portion **(28)** for movably supporting said sealing portion;

a flexible annular diaphragm **(22)** having a radially outer base portion **(25)** received coaxially in said recess **(15)** axially outwardly of said seal base portion and in sealing engagement with said circumferential surface **(20)** of said recess, a stiffener portion **(26)** operatively connected to said seal sealing portion **(28)** and defining an axially outer portion **(33)** exposed axially outwardly of said seal sealing portion **(28)**, and said axially flexible connecting portion **(27)** extending between said diaphragm base **(25)** and sealing portion **(28)** axially outwardly of said seal connecting portion **(30)**; and

spring means **(24)** coaxially in said recess and acting between said first member and said stiffener portion to urge said lip into maintained movable sealed engagement with said confronting surface.

4,284,282

SEALING GASKET

Klaus Lönne, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

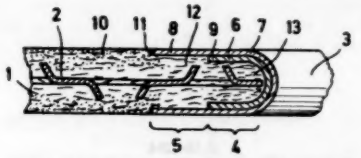
Filed Feb. 14, 1980, Ser. No. 121,512

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906127

Int. Cl.³ F16J *15/06*

U.S. Cl. 277—235 B **4 Claims**

1. In a sealing gasket having a soft-material plate provided with a throughgoing opening; a sheet metal frame surrounding the opening and formed of an inner and at least one outer superposed sheet metal border flange having a U-shaped cross section; each border flange having legs arranged at opposite faces of the plate along edge zones of said opening; the improvement wherein the legs of the outer border flange are longer than the legs of the inner border flange and further wherein the edge zone of the soft-material plate within the outline of said frame is fully filled with the soft material.



4,284,283

EXPANSIBLE CHUCK

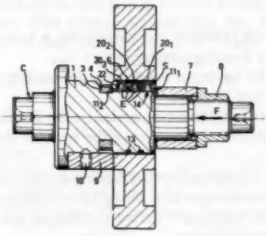
Vid Stermann, St. Georgen, Fed. Rep. of Germany, assignor to Tobler S.A. Mecanique de Precision Franco-Suisse, Louvres, France

Filed Jul. 3, 1979, Ser. No. 54,629

Claims priority, application France, Jul. 5, 1978, 78 19953

Int. Cl.³ B23B *31/02, 31/40*

U.S. Cl. 279—2 R **10 Claims**



1. A chuck for gripping and positioning a cylindrical workpiece, comprising:

a chuck body having a cylindrical surface complimentary to that of a workpiece to be gripped by said chuck and which provides a clearance with a juxtaposed face of said workpiece, said chuck body having multiple grooves extending longitudinally of said cylindrical surface and which are equally spaced circumferentially thereof;

a radial abutment provided on said chuck body at one axial end of each of said longitudinal grooves;

an annular member slidably supported on said chuck body for movement axially thereof;

a radial abutment on said annular member co-extensive with said multiple grooves and positioned adjacent to the other axial end of each of said grooves;

means for exerting an axial force on said annular member in a direction towards said other end of each of said grooves; and

an elongate axially-compressible expansion member positioned within each of said grooves, each expansion member comprising an elongate transversely crenelated strip of a spring-steel like material having a radially-extending abutment portion at its respective longitudinal ends, resilient incompressible elastomeric material filling the crenelations on one side of said strip, and resilient incompressible elastomeric material partially filling the crenelations on the side of said strip opposite said one side, said radially extending abutment portions being respectively engaged

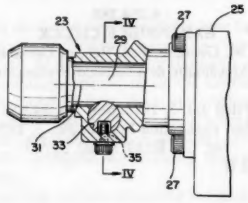
by said radial abutment of the chuck body and said radial abutment of said slidable annular member, said expansion member expanding in thickness upon the application of an axially directed compressive force thereto by said slidable annular member.

4,284,284

RETAINER ARRANGEMENT FOR TOOLS

Daniel H. Sides, New Freedom, Pa., assignor to Black & Decker Inc., Newark, Del.

Filed Jan. 31, 1979, Ser. No. 8,229
Int. Cl.³ B23B *31/08*
U.S. Cl. 279—19.5 **4 Claims**



1. A tool bit retaining mechanism for a hammering power tool having a housing comprising:

(a) a tool bit having a shank with an annular undercut portion formed thereon,

(b) a bit receiving member carried on the housing and having a bore therein for receiving the tool bit along a tool bit axis,

(c) the bit receiving member having a transverse portion,

(d) the transverse portion of the bit receiving member having a first opening to define a retaining axis, said portion traversing the bore,

(e) the retaining axis lying outside of the bore,

(f) the first opening at its perimeter being in communication with the bore,

(g) a retaining member being slidingly disposed in the transverse portion in a first or second position and having a body portion therein intersecting the bore when the retaining member is in its first position,

(h) the body portion having an upper surface extending about a part of the body portion periphery,

(i) means connected to the retaining member for yieldably urging the retaining member into its first position,

(j) means mounted in the transverse portion for biasing the urging means while preventing rotation of the retaining member about the retaining axis,

(k) a cutout formed only in the upper surface of the body portion and being positioned across the bore to permit the bore to make its full opening when the retaining member is depressed against the biasing means into its second position,

(l) the tool bit shank being slidably received within the bore of the bit receiving member when the retaining member is in its second position, and

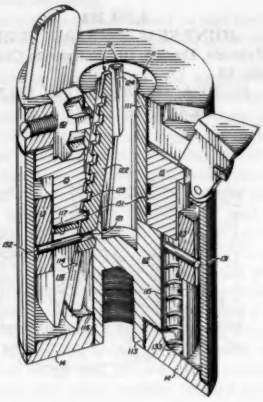
(m) the annular undercut portion of the tool bit having a predetermined axial length and terminating at each end in an interior shoulder, at least one shoulder being engageable by the retaining member when the retaining member is in its first position, the tool bit thereby being retained in the tool and partaking of the tool's hammering motion.

4,284,285

SELF-ADJUSTING ROTARY CHUCK

Friedrich P. Futter, 5115 N. 40th St. (E 204), Phoenix, Ariz. 85018

Filed May 7, 1979, Ser. No. 36,501
Int. Cl.³ B23B *31/08, 31/19*
U.S. Cl. 279—62 **1 Claim**



1. In a chuck for releasably holding an object such as a tool or workpiece, including

circumferentially spaced jaws for grasping said object which are

movable radially outwardly to an open position to permit insertion of said object therebetween, and

adapted to move radially inwardly to an object-grasping position, and

means for adjusting the radial position of said jaws to grasp objects of varying size,

the improvements comprising:

(a) inclined key threads on said jaws;

(b) a rotatable jaw-positioning collar around said jaws, including inclined, inwardly extending, circumferentially spaced key threads adapted to cooperatively engage and disengage the key threads on said jaws, which collar

(i) urges said jaws axially outwardly and radially inwardly to said object-grasping position when said collar is rotated to engage said key threads, and

(ii) permits free axial and radial movement of said jaws to said open position when said collar is rotated to disengage said key threads;

(c) means for rotating said collar to engage and disengage said key threads; and

(d) means for normally yieldably urging said jaws axially outwardly and radially inwardly when said key threads are disengaged.

4,284,286

COMBINATION HANDTRUCK AND PORTABLE WORK TABLE

Charles D. Lewallen, Rte. 2, Box 1075, Corbett, Oreg. 97109

Filed Aug. 2, 1979, Ser. No. 63,080
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—30 **5 Claims**

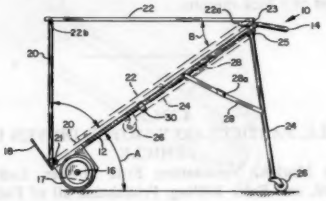
1. In a handtruck having an elongate main frame with a handle at a first longitudinal end thereof and a toe blade and pair of wheels at the opposite longitudinal end thereof, the improvement comprising:

(a) a rigid, generally planar surface attached by a first pivotal connection to said main frame so as to pivot about an axis generally perpendicular to the longitudinal dimension of said main frame, said surface extending from said first

pivotal connection toward said opposite end of said main frame;

(b) a toe blade extender comprising a rigid elongate frame attached by a second pivotal connection to said main frame adjacent said opposite end thereof so as to pivot about an axis generally perpendicular to the longitudinal dimension of said main frame;

(c) means for limiting the pivotal movement of said toe blade extender about said second pivotal connection so as to permit movement thereof only between a first pivotal position, wherein said extender is substantially parallel to said main frame and extends from said second pivotal connection toward said first longitudinal end of said main frame, and a second pivotal position wherein said extender is substantially perpendicular to said main frame and ex-



tends therefrom substantially parallel to and in abutment with said toe blade;

(d) cooperative means on said planar surface and toe blade extender respectively for permitting said toe blade extender to be selectively engaged with said planar surface such that said toe blade extender supports said planar surface at a first acute angle relative to said main frame while holding said toe blade extender in an intermediate pivotal position between said first and second pivotal positions respectively; and

(e) ground-engaging support means on said main frame for supporting said main frame, in cooperation with said pair of wheels, at an acute angle relative to the ground substantially equal to said first acute angle such that said planar surface is thereby supported substantially parallel to the ground.

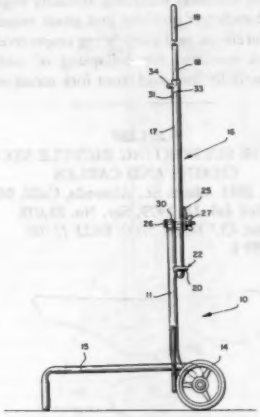
4,284,287

TELESCOPING HANDLE FOR A SMALL HEAVY DUTY HAND TRUCK

Patsy Esposito, 350 Clarkson Ave., Brooklyn, N.Y. 11226

Filed Oct. 9, 1979, Ser. No. 83,213
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—47.37 R **8 Claims**

1. A telescoping handle for a small strong collapsible hand truck, said hand truck including at least an upright support means, said handle including a first U-shaped portion and a second U-shaped portion, said U-shaped portions slidably interengaged, two pairs of openings in said first U-shaped portion, each said pair horizontally aligned, one pair near the upper portion of said first U-shaped portion and the other pair near the lower portion of said first U-shaped portion, a pair of openings in said second U-shaped portion, said pair of openings horizontally aligned, said pair of openings near the lower part of said second U-shaped portion, detent means extending through said pair of openings in said second U-shaped portion, spring means within said second U-shaped portion biasing said detent means to extend through said openings, said detent means engagable in either of said two pairs of openings in said first U-shaped portion, guide means on said upright support means, said guide means adapted to guide said handle adjacent to said upright support means, a first stop means, said first stop means adjacent to said upright support means adapted to stop the upward movement of said handle in said guide means, a second stop means adjacent said upright support means adapted to stop the downward movement of said handle in said guide means, and means to fix said handle in selected position with relation to said upright means, said means to fix including means to depress said detents extending through said first



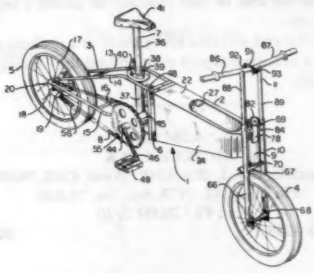
U-shaped portion's openings and release said first and second U-shaped parts from engagement.

4,284,288

FOLDING BICYCLE STRUCTURE

Roger G. Fulton, 3731 Garner, Kansas City, Mo. 64123

Filed Sep. 24, 1979, Ser. No. 78,433
Int. Cl.³ B62K *15/00*
U.S. Cl. 280—278 **10 Claims**



1. A portable, folding bicycle comprising:

(a) a main frame having front and rear frame sections respectively supporting front and rear wheels and having hinge means interconnecting said frame sections for folding relative to each other into a compact, side-by-side relationship;

(b) a removable seat structure and means for detachably connecting said seat structure to said main frame;

(c) rear fork members extending from said rear frame section and rotatably supporting said rear wheel;

(d) power transmission means extending between said main frame and said rear wheel for effecting rotation thereof;

(e) said front frame section having a frame member defining a receptacle for receipt of said front wheel, said front frame section having a steering assembly affixed thereto and including upper and lower end portions;

(f) a front fork assembly foldably mounted to said steering assembly and having spaced, tubular, front fork, members rotatably supporting said front wheel therebetween and connecting hinge means attaching said front fork members to said lower end portion of said steering assembly for

rearward and upward folding of said front fork members and said front wheel into said receptacle for compact storage thereof when the bicycle is folded; and

(g) a handlebar assembly including mutually engageable and separable handlebar portions and posts respectively depending therefrom, said posts being respectively received in said fork members for collapsing of said handlebar assembly partially into said front fork members.

4,284,289

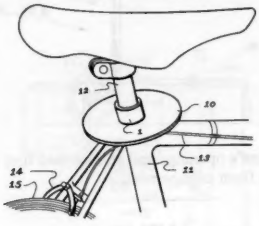
DEVICE FOR SUPPORTING BICYCLE SECURITY CHAINS AND CABLES

Edwin E. Loux, 2841 Adams St., Alameda, Calif. 94501

Filed Jul. 16, 1979, Ser. No. 58,078

Int. Cl.³ B62H *5/00*; B62J *11/00*

U.S. Cl. 280—289 L **2 Claims**



1. A device for storing security chains and cables on a bicycle having a seat post, comprising:

a tubular cylinder having a circumferential groove on the outside wall and a longitudinal compression space;

a circular disc coupled in said groove at right angles to the longitudinal axis of said cylinder to create a small platform; and

said cylinder and said disc being made of a resilient material, and as a unit are adapted to fit around the existing bicycle seat post.

4,284,290

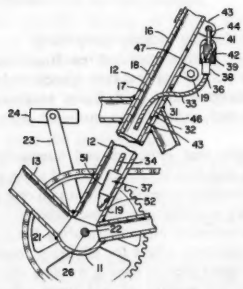
BICYCLE LOCK

Fred L. Ragsdale, Rte. 1, Box 424F, Weed, Calif. 96094

Filed Sep. 14, 1979, Ser. No. 75,610

Int. Cl.³ B62H *5/10*

U.S. Cl. 280—289 L **10 Claims**



1. In a bicycle having an upwardly extending frame tube, the improvement comprising:

means forming an opening at the upper end of said frame tube from the interior thereof to the exterior thereof,

an elongated flexible cable extending through said opening and having a first end disposed within said frame tube and a second end disposed outside of said frame tube, said cable having a predetermined amount of weight,

means comprising first stop means on said cable within said tube for limiting the amount of said cable that can be pulled out from within said frame tube, and further comprising bias means for pulling said first end of said cable through said frame tube in a direction to pull said cable into said frame tube and with a force greater than the weight of said cable outside of said frame tube when said cable has been pulled out from said frame tube to the extent permitted by said first stop means,

second stop means on said cable outside of said frame tube for limiting the amount of said cable that can be pulled into said frame tube,

attachment means at said second end of said cable for attachment of a lock thereto.

4,284,291

VEHICLE, PARTICULARLY MOTOR DRIVEN UTILITY VEHICLE

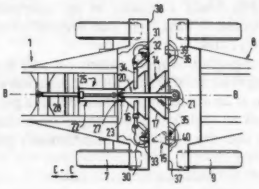
Albrecht Morlok, Nordstetten; Fritz Hacker, Ludwigsburg-Ossweil, and Peter Kölling, Friolzheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 82,218

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843225

Int. Cl.³ B60D *1/00*; B62D *53/02*

U.S. Cl. 280—479 R **14 Claims**



1. A vehicle of the type having a motor driven vehicle unit and a wheeled auxiliary hook-up unit coupled thereto, comprising:

(a) towing coupling means pivotally connected at a first end to said auxiliary unit for enabling towing of said auxiliary unit.

(b) hook-up coupling means for securing a second, opposite, end of said towing coupling means to said vehicle unit and forming a pivotal interconnection therebetween.

(c) tightening fixture means mounted to said vehicle unit for displacing the towing coupling means, when it is secured to said hook-up coupling means, between a first position wherein said hook-up unit is towable behind said vehicle unit in an articulated manner and a second position wherein said hook-up unit is drawn adjacent said vehicle unit and is towable rigidly coupled to said vehicle unit.

(d) centering means for centering said vehicle unit relative to said auxiliary hook-up unit and including a centering member mounted in association with each of said units in surrounding relationship to said towing coupling means, said centering means being operable to guide said towing coupling means into a position within said tightening fixture means wherein it is securable to said hook-up coupling means, and

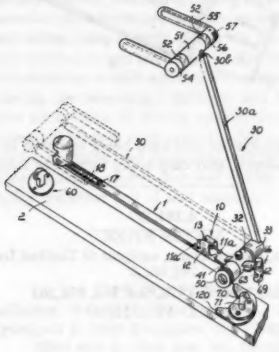
(e) locking means for fixedly securing said auxiliary unit to said vehicle unit, when said hook-up unit is drawn adjacent said vehicle.

4,284,292

SKI FASTENER STRUCTURE

Antonio Faulin, Via G. da Procida, 4-Milano, Italy

Filed May 21, 1979, Ser. No. 41,443
Claims priority, application Italy, May 24, 1978, 23763 A/78
Int. Cl.[3] A63C *9/08*
U.S. Cl. 280—618 **21 Claims**



1. A ski fastener structure comprising a substantially rigid bar element having a front end and a rear end, front latching means at said front end and rear latching means at said rear end for removably connecting said bar element to a ski, a rod-like element having one end pivotally connected to said bar element about an axis transverse thereto at said rear end and another end having means for engaging a skier's leg from the rear, resilient means between said bar element and said rod-like element for holding said rod-like element in engagement with said skier's leg in a number of inclined positions of said skier's leg during skiing, means at a front sole portion and at a rear sole portion of a skier's footwear and at a front portion and at a rear portion of said bar element for removably connecting said footwear to said bar element such as to allow lengthwise movement of said footwear on said bar element between a disengaged position and an engaged position of said footwear with said bar element, and means for holding said footwear on said bar element in said engaged position.

4,284,293

ADJUSTABLE STAND

Izydor Rygajlo, Prior Lake, Minn., assignor to Delmer M. Stamness, New Prague, Minn.

Filed Apr. 25, 1980, Ser. No. 143,740
Int. Cl.[3] B66F *3/08*
U.S. Cl. 280—766 **9 Claims**

1. Adjustable stand apparatus in combination:

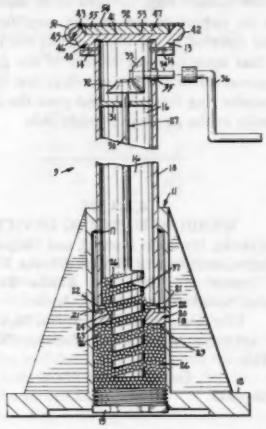
a hollow cylindrical reservoir having an axis extending between a first, closed end and a second, open end thereof;

a hollow cylindrical piston having a first end received in said reservoir and a second end extending axially therefrom, said piston being slidable axially in said reservoir so that said piston and said reservoir jointly define a chamber of variable volume;

closure means for said first end of said piston, having an aperture therein to divide said chamber into first and second portions and to provide a passage between said portions;

a charge in said chamber of particulate load supporting material capable of granular flow through said passage, said closure means being configured to facilitate the gravity-responsive flow of said material in a first direction, from said piston to said reservoir, but to inhibit load-responsive flow of said material in a second direction, from said reservoir to said piston;

agitator means carried in said piston and extending through said aperture and operable to enable load responsive flow



of said material through said passage in said second direction; and

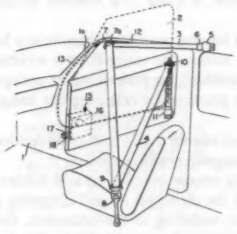
means for manually causing actuation of said agitator means.

4,284,294

PASSIVE VEHICLE PASSENGER RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 23,720
Claims priority, application Japan, Mar. 31, 1978, 53-40981[U]
Int. Cl.[3] B60R *21/10*
U.S. Cl. 280—803 **5 Claims**



1. A passive vehicle passenger restraint belt system comprising a mechanical motion amplifier mounted in the door of the vehicle; an input device connected between the vehicle body adjacent the front hinged end of the door and the motion amplifier to transmit the opening and closing motions of the door relative to the vehicle body to the motion amplifier; a shoulder belt guide rail affixed to the vehicle roof generally above the door and extending between a point generally above and behind the adjacent vehicle seat and a point generally above and forward of the seat; a shoulder belt transfer ring received in the shoulder belt guide rail for sliding movement between a rearward and a forward position therein; a shoulder belt having a portion received by the shoulder belt transfer ring for movement therewith; a lap belt guide rail affixed to the vehicle door and extending between a lower position near the lower rear corner of the door and an upper position near the window ledge; a lap belt transfer ring received in the lap belt guide rail for sliding movement between a lower position and

an upper position therein; a lap belt having a portion received by the lap belt transfer ring for movement therewith; and a single continuous drive wire coupled adjacent one end to the shoulder belt transfer ring, coupled at an intermediate driven portion to an output of the motion amplifier to be driven thereby and coupled at the other end to the lap belt transfer ring such that upon opening motion of the door the motion amplifier moves the drive wire in a direction to pull the shoulder belt transfer ring forwardly and push the lap belt transfer ring upwardly in the respective guide rails.

4,284,295

WEBBING HANGING DEVICE

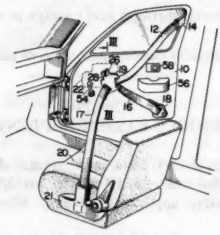
Nobuhiro Takeda; Masaichi Hattori, and Shigeo Mizuno, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Nishikasugai, both of, Japan

Filed Oct. 19, 1979, Ser. No. 86,423

Claims priority, application Japan, Nov. 9, 1978, 53/154867[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—803 **10 Claims**



1. A webbing hanging device on which webbing for restraining an occupant is hung in a seatbelt system for a vehicle, comprising:

(a) a holder having projected therefrom a hanging hook and rotatable within the range from a webbing hanging position for webbing for restraining an occupant to a webbing dropping position for releasing the hanging of said webbing;

(b) a resilient member for biasing said holder in the direction of said hanging position; and

(c) a driving source coupled to said holder for rotating the holder in the direction of said dropping position and fastening the webbing to the occupant, the driving source being transmitted to said holder whereby after the occupant has entered the vehicle, a driving force of said driving source causes the holder to turn to a dropping position, said webbing is released from said holder to restrain the occupant and said holder is biased by said resilient member to be set at a hanging position.

4,284,296

FIRE RESISTANT IDENTIFICATION DEVICE

Sara M. Evans, 1595 Odell St., Bronx, N.Y. 10462

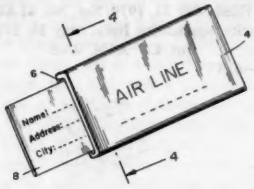
Filed Jun. 21, 1979, Ser. No. 50,819

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—7 **5 Claims**

1. The method of making a fire resistant identification device comprising providing a card of asbestos, embossing identification information thereon, providing a case of fire resistant substance for the card and enclosing the card in the case.

2. A fire-resistant body carried identification device, comprising in combination, a card of fire resistant substance bearing identification indicia, said card being enclosed in a case of fire-resistant material, said card being formed of asbestos.



4,284,297

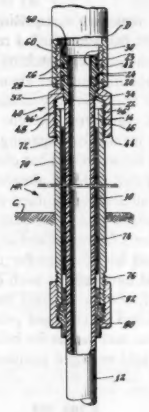
METER RISER

Louis A. Godkin, Bethel, Conn., assignor to Textron Inc., Providence, R.I.

Filed Nov. 6, 1978, Ser. No. 958,263

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—47 **11 Claims**



1. A meter riser unit for use in a system for conducting pressurized fluid, such as gas, from a source, such as a gas main, below ground level to a point of delivery member, such as a gas meter or the like, disposed above ground level comprising:

an elongated continuous plastic tube having one of its ends adapted to be disposed below ground level to communicate with the source, as by being connected to an underground gas service line, and the other of its ends adapted to be disposed above ground level adjacent to and in communication with the point of delivery member, whereby said plastic tube constitutes an essentially completely non-metallic gas conducting conduit part of the riser;

an elongated rigid metal pipe casing of a larger diameter than said plastic tube concentrically spaced about a portion of said plastic tube; said casing being adapted to be disposed partially above and partially below ground level and having one end disposed adjacent to said other end of said plastic tube, and

means including a separable unitary metal fitting and a plastic adapter connecting said adjacent ends to each other in fluid tight relationship whereby said casing supports and protects said plastic tube; said fitting comprising a portion arranged to be secured to said one casing end, and an inner cylindrical surface arranged to receive said plastic

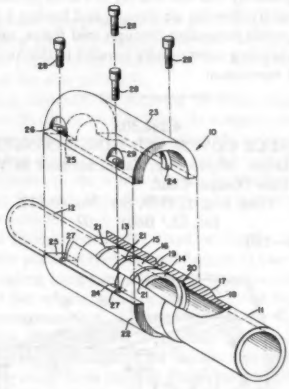
adapter; said plastic adapter secured to and communicating with said plastic tube; said plastic adapter being disposed within and engaging said inner cylindrical surface of said fitting; said fitting and said adapter having interengaging shoulders to prevent said plastic tube and said adapter from being pulled through said fitting into said casing, the shoulder on said adapter being formed at one end of said adapter; said fitting having an inwardly extending annular rib formed intermediate its ends; the shoulder on said fitting being formed at said rib; the portion of said adapter secured to said plastic tube being tubular and of an outside diameter to have a sliding fit within said rib; means for sealing the connection between said fitting and said adapter comprising an O-ring carried by said adapter in compressive sealing engagement with said fitting; and means for retaining said adapter in said fitting comprising a spring locking member disposed within said fitting and engaging the other end of said adapter.

4,284,298

PIPE COUPLING

John Kaufmann, Jr., 3716 Woodrow Ave., Pittsburgh, Pa. 15227, assignor to John Kaufmann, Jr., Pittsburgh, Pa.

Filed Jan. 8, 1980, Ser. No. 110,551
Int. Cl.³ F16L 27/12
U.S. Cl. 285—302 **1 Claim**



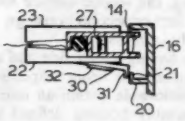
1. A coupling for maintaining pipe ends in end-to-end axial alignment, said pipe ends being thickened with one disposed with the other, stop means being provided on the interior of the outer thickened portion to limit the extent of insertion of the other thickened portion, an annularly disposed recess disposed on the thickened portion of the outer pipe, and a plurality of spaced O-rings disposed on the inner thickened portion in engagement with the interior of the outer thickened portion, said coupling comprising a pair of substantially identical sections, each section defining a body of substantial length and having an interior annular locating flange extending inwardly from one end of the body and an annular inwardly extending flange formed at the other end, said flanges being peripherally disposed whereby when the sections are mated, the flanges will be disposed in a common plane, with the interior annular flange being disposed in said annular recess and the flange formed at the other end engaging the thickened portions of the outer and inner pipe ends, and fastening means releasably securing the sections together, said fastening means comprising aligned openings in the sections receiving removable fastener means.

4,284,299

INTEGRAL HANDLE STOP AND LATCH MEMBER FOR SLIDING SCREEN CLOSURES

Donald V. Kelly, 15903 Condor Ridge Rd., Canyon Country, Calif. 91351

Filed Jan. 22, 1979, Ser. No. 5,475
Int. Cl.³ E05C 19/06
U.S. Cl. 292—87 **8 Claims**



1. A handle for a movable screen door having an edge frame and central screen cloth, said screen door movable into a slot-like recess including a reentrant hook portion in the structure against which the door is closed;

said handle comprising an elongated body portion;

means securing said handle to said frame member with said elongated body portion extending in the direction of the length of the screen door frame;

said handle including a spring finger formed integrally therewith and extending above the plane of the screen door frame member in position to engage in an abutting relationship said reentrant hook portion;

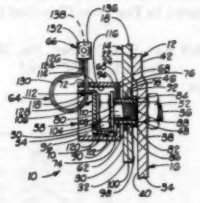
said spring finger being deflectable generally into the plane of the screen door to allow it to pass into a slot in the structure against which the screen door is closed and to allow locking engagement with said reentrant hook portion.

4,284,300

SECURITY LOCKING ASSEMBLY

Michael D. Campbell, Newalla, Okla., assignor to Metalfab Industries, Inc., Oklahoma City, Okla.

Filed Aug. 13, 1979, Ser. No. 66,079
Int. Cl.³ E05C 13/02
U.S. Cl. 292—251 **11 Claims**



1. An improved security locking assembly for substantially preventing unauthorized removal of a bolt having a bolthead, the bolt operably engaging a securing member for joining a first housing to a second housing when one of the housings telescopically receives a portion of the other of the housings, each of the housings having an aperture therein such that in a connected position the apertures of the housings are aligned for receiving the bolt, the locking assembly comprising:

a locking assembly housing comprising:

a base plate having a first side, an opposed second side, and an aperture; and

wall means having at least one aperture therein, the wall means extending outwardly from the first side of the base plate such that the aperture of the base plate is alignable with the apertures of the first and second housings for receiving the bolt;

a bushing assembly disposed within the aperture of the base plate for rotatably mounting the locking assembly housing

to the first and second housings by the bolt, the bushing assembly comprising:

a body member having a bore extending therethrough, the body member further defined as having a first end portion and an opposed second end portion; and

a flange extending radially from the first end portion of the body, the flange having a first surface for cooperating with the body member to form a shoulder for supporting one of the locking assembly housing and the first housing, the second surface abutting a portion of one of the first or second housings;

a cover assembly comprising:

a cover plate having a first side and an opposed second side, the cover plate being shaped such that the cover plate is positionable within an interior portion of the locking assembly housing defined by the wall means and the base plate such that the cover plate substantially covers the bolt head; and

a first tab member having an aperture therein, the first tab member extending from the first side of the cover plate and disposed near a first interior portion of the wall means of the locking assembly housing such that in a connected position the aperture of the first tab member is aligned with the aperture of the wall means;

a pin having a first end portion and a second end portion, one of the first and second end portions of the pin extending through the aligned apertures of the wall means and the first tab member for connecting the cover plate to the wall means of the locking assembly housing, the pin being shaped such that the first end portion of the pin is disposed near the second end portion of the pin, so that in an assembled position the pin, the locking assembly housing, and the cover assembly cooperate to secure the cover plate of the cover assembly in a bolthead covering position; and

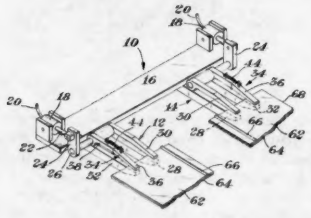
means for securing the first end portion of the pin to the second end portion of the pin to substantially prevent removal of the pin from the locking assembly housing and the cover plate of the cover assembly without destruction of a portion of one of the pin and the locking assembly housing.

4,284,301

BAG TRANSFER DEVICE

Herbert B. Geiger, Bay City, and David A. Smith, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 9, 1979, Ser. No. 28,633
Int. Cl.³ B66C *1/42*
U.S. Cl. 294—104 **7 Claims**



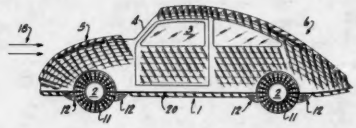
1. A device for clamping and transferring products of varying wall thicknesses comprising a pair of clamping jaw assemblies, one of said assemblies comprising a first jaw and a second jaw, means for driving said first jaw a given distance towards but fixedly spaced from the second jaw to clamp one thickness of said products, the other one of said assemblies comprising a first jaw and a second jaw, means for automatically biasly adjusting the second jaw of said other one of said assemblies towards the first jaw thereof and approaching a closed position therewith to clamp a thickness of said products different than said one thickness, said second adjustable jaw being flexible from said position so as to accommodte said different wall thicknesses of said products located between the jaws of said other one of said assemblies.

4,284,302

DRIVEN CRAFT HAVING SURFACE MEANS FOR INCREASING PROPULSION EFFICIENCIES

Hilbert F. P. Drews, 5640 S. 76th St., Greendale, Wis. 53129

Filed Jun. 11, 1979, Ser. No. 47,302
Int. Cl.³ B64C *1/38*; B62D *35/00*
U.S. Cl. 296—1 S **14 Claims**



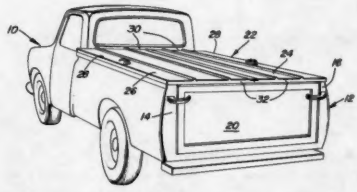
1. A driven craft adapted to be moved through a fluid and having an exterior wall means, said wall means of the craft defining fluid engaging surfaces, said wall means creating frictional engagement with the medium, said wall means including a substantial plurality of adjacent parallel wave-shaped flutes, each of said flutes extending rearwardly along said surface at a selected inclusive angle substantially less than ninety degrees to the forward direction of craft movement, the cross-section of each of said flutes having a trough portion extending upwardly and rearwardly to a crest portion developing an outwardly flowing air stream, and having a plurality of channelling walls extending through said flutes, said channelling walls extending substantially parallel to the forward direction of craft movement.

4,284,303

PICKUP TRUCK COVER AND HINGE CONSTRUCTION

Robert K. Hather, Morro Bay, Calif., assignor to Mark Woolpert, San Luis Obispo, Calif.

Filed Aug. 1, 1979, Ser. No. 63,112
Int. Cl.³ B60P *7/02*
U.S. Cl. 296—100 **10 Claims**



1. In combination with a load receptacle of the type including first and second upstanding opposite side walls and at least one end wall extending between one pair of corresponding ends of said side walls, a cover assembly including a pair of opposite side cover sections disposed in side-by-side relation and having remote marginal edges thereof overlying the upper marginal portions of said side walls, corresponding end marginal edges overlying the upper marginal portions of said end wall and adjacent marginal edges extending longitudinally of and generally transversely centered over said receptacle, first and second separable hinge means pivotally securing said remote marginal edges to said marginal portions of said first and second side walls, respectively, third separable hinge means pivotally securing said adjacent marginal edges together, said first, second and third hinge means each including a plurality of barrel hinge structures spaced along the corresponding cover section edges and with each hinge structure including first and second relatively angularly displaceable

hinge barrels and an axially shiftable hinge pin extending through said hinge barrels, one of said first and second hinge barrels being radially slotted and said hinge pins including transversely narrowed portions shiftable into and out of registry with said slotted barrels upon longitudinal shifting of said pins, and said transversely narrowed portions being receivable through said slots.

4,284,304

MOUNTING STRUCTURE FOR THE FRONT SIDE EDGE OF A ROOF FINISHER OF A VEHICLE

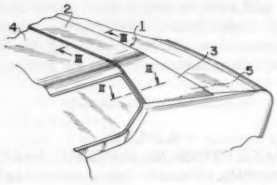
Yoshiharu Nakamura, Koganei, Japan, assignor to Nissan Motor Company Limited, Japan

Filed Jul. 19, 1979, Ser. No. 58,773

Claims priority, application Japan, Sep. 12, 1978, 53-125859[U]

Int. Cl.³ B62D *27/00*

U.S. Cl. 296—201 **5 Claims**



1. In a vehicle comprising a roof panel **(4)**, a side pillar **(5)**, a side window glass **(7)** supported by the side pillar **(5)**, and a roof finisher **(1)** mounted over part of the roof panel **(4)** and at least part of the side pillar **(5)**,

a mounting structure for securing the front edge of the side portion **(3)** of the roof finisher **(1)** which is mounted over the side pillar **(5)** to the side pillar **(5)**, comprising:

a first fitting member **(9)**, fixed on the front of the side pillar **(5)**, adjacent to the window glass **(7)**, and having one end angling forwards therefrom and away from the center line of the vehicle;

a second fitting member **(1)**, fixed on the front edge of the said side portion **(3)** of the roof finisher **(1)**, and having one end angling backward therefrom and towards the center line of the vehicle; said one end of the first fitting member **(9)** interconnecting said one end of the second fitting member **(11)** such that a hooking effect is provided to prevent the front edge of the finisher side portion **(3)** from moving away from the first fitting member **(9)** and

means **(12)** for fixing the first and the second fitting members **(9, 11)** together.

4,284,305

APPARATUS FOR UPHOLSTERING A VEHICLE CHAIR

Charles A. Porter, and James M. Kozak, both of Colleyville, Tex., assignors to Nautical Interiors Corporation, Fort Worth, Tex.

Filed Feb. 1, 1979, Ser. No. 8,440

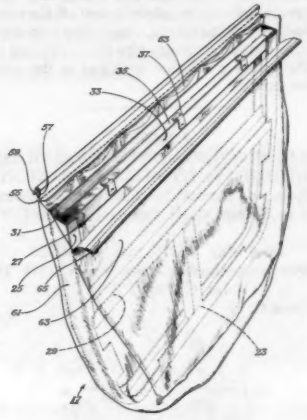
Int. Cl.³ A47C *27/00, 7/02*

U.S. Cl. 297—452 **7 Claims**

1. In a vehicle chair of the type having a back connected to a seat, the back having a metal frame over which an enclosure of upholstery material with a front portion and a back portion is embraced, an improved closure means for securing the lower end of the front portion to the lower end of the back portion, comprising:

a frame member extending across the bottom of the frame, the member having front and back walls and a slot extending the length of the member between the walls;

the lower end of the front portion of the upholstery material and the lower end of the back portion of the upholstery material being drawn tightly together and inserted in the slot; and



clip means mounted inside the slot of the frame member to one of the walls for retaining the ends of the material in contact with each other inside the slot.

4,284,306

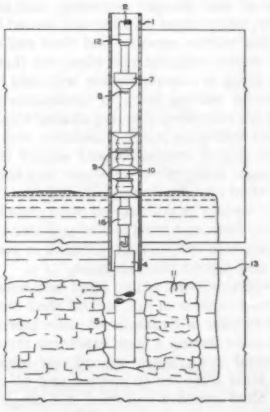
APPARATUS AND METHOD OF MINING SUBTERRANEAN RUBBLE PILES

Byron P. Edmonds, Denver, Colo., and Selby W. Porter, Calgary, Canada, assignors to PPG Industries Canada Ltd., Regina, Canada

Filed Jul. 16, 1979, Ser. No. 57,861

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—5 **11 Claims**



1. A method of solution mining the mineral content of a subterranean cavity containing a rubble pile positioned on the floor thereof, the subterranean cavity communicating with the surface by one or more boreholes, comprising introducing into a cased borehole communicating with the cavity a drill string having a liner positioned on the lower end of the string and a drill bit positioned on the lower end of the liner, the drill string and liner being joined by quick release connecting means, drilling into the rubble pile to a predetermined depth, the upper portion of the liner being within competent casing,

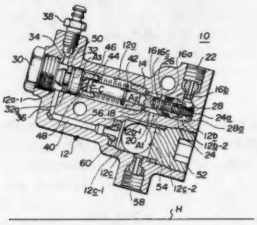
disconnecting the drill string from the liner by the quick release connecting means, withdrawing the drill string, establishing communication between the liner and the cavity, introducing sealing means into the borehole to seal off the annular space between the liner and the casing, connecting said sealing means to the liner, introducing solvent into the cavity and withdrawing from the cavity a solution enriched in the mineral contained in the cavity.

4,284,307

HYDRAULIC PRESSURE CONTROL VALVE ASSEMBLY FOR AUTOMOTIVE HYDRAULIC BRAKE SYSTEM

Hitoshi Kubota, and Kazuaki Shimizu, both of Fujisawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 7, 1979, Ser. No. 36,724
Claims priority, application Japan, May 9, 1978, 53-54026
Int. Cl.³ B60T *8/14*
U.S. Cl. 303—6 C **6 Claims**



1. A hydraulic pressure control valve assembly for a hydraulic brake system for a wheeled vehicle, comprising:

a housing having therein a fluid inlet port, a fluid outlet port, and first and second interconnecting coaxial blind chambers, each said blind chamber having a blind end opposite the other said blind chamber;

a plunger slidably mounted in said second blind chamber, a portion of said plunger extending into said first blind chamber, said plunger dividing said second blind chamber into a first section opposite said blind end thereof, and a second section adjacent said blind end thereof, said first section being in communication with said inlet port, and said second section being in communication with said outlet port, said plunger having an axial blind hole therein, said blind hole being in communication with both said first and said second sections of said second blind chamber, said plunger being movable toward said blind end of said second blind chamber in response to hydraulic pressure in said first section of said second blind chamber, and movable away from said blind end of said second blind chamber in response to hydraulic pressure in said second section of said second blind chamber;

a poppet valve and seat in said blind hole between said first and second sections of said second blind chamber to control the transfer of hydraulic pressure therebetween, said poppet valve having a stem extending through said seat and beyond said plunger toward said blind end of said second blind chamber to contact said blind end of said second blind chamber and open said poppet valve when said plunger moves toward said blind end of said second blind chamber, said poppet valve being coupled with a biasing means to bias said poppet valve into a closed position against its seat to, in turn, interrupt the transfer of hydraulic pressure from said inlet port to said outlet port when said plunger moves away from said blind end of said second blind chamber;

a single spring axially disposed in said valve body to urge said plunger toward said blind end of said second blind chamber, the combination of said spring, said plunger, and said poppet valve constituting a proportionally limiting valve to proportionally limit an increase in hydraulic pressure at said outlet port resulting from an increase of hydraulic pressure at said inlet port;

a piston slidably disposed in said first blind chamber, said single spring being interposed between said piston and said plunger to urge said piston and said plunger in opposite directions, said piston defining a sealed expandable chamber between said piston and said blind end of said first blind chamber, said expandable chamber being communicable with said inlet port;

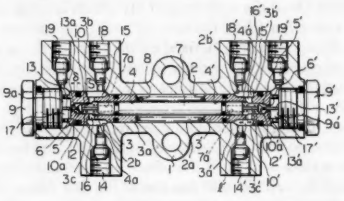
a deceleration valve interposed between said inlet port and said expandable chamber, said deceleration valve including means for controlling the transfer of hydraulic pressure to said expandable chamber in accordance with the deceleration of said vehicle, said piston being movable into an override position in response to a predetermined hydraulic pressure in said expandable chamber to suppress the axial movement of said plunger by moving into mating engagement with said plunger, urging said plunger toward said blind end of said second blind chamber, and causing said stem of said poppet valve to contact said blind end of said second blind chamber, thereby opening said poppet valve, thereby overriding the proportional pressure limiting function of said proportionally limiting valve.

4,284,308

BRAKE PRESSURE CONTROL VALVE

Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 865,326, Dec. 28, 1977, abandoned.
This application Jun. 11, 1979, Ser. No. 47,802
Claims priority, application Japan, Jan. 12, 1977, 52/2010
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—6 C **4 Claims**



1. A brake pressure control valve comprising:

a housing;

first and second separate fluid passages extending through said housing, said fluid passages having separate first ends connected to a source of hydraulic pressure and separate second ends connected to respective separate brake wheel cylinders of a vehicle;

first and second valve bodies slidably disposed within said housing, said first and second valve bodies each having first and second opposite ends, said first ends being positioned to face each other, said second ends of said first and second bodies being exposed to said first and second fluid passages, respectively;

first spring means acting on said first ends for urging said valve bodies away from each other;

a free piston assembly having opposite first and second end portions slidably received within said first and second valve bodies, respectively, each said end portion having therein a bore;

means for exposing the end faces of said first and second end portions of said free piston assembly to hydraulic pressure in said first and second fluid passages, respectively;

first and second valve members mounted on and carried by said first and second end portions, respectively, of said free piston assembly for relative sliding movement in-

wardly and outwardly thereof in opposite directions therefrom, each said valve member comprising an elongated shank extending into the respective said bore of the respective said end portion of said free piston assembly, a first end of said shank having a large diameter portion slidably received in said respective bore, a second end of said shank having a valve head positioned outwardly of said respective bore;

first and second valve seats on said first and second valve bodies, respectively, for engagement with valve heads of said first and second valve members, respectively, to close said first and second fluid passages, respectively;

first and second first stop means positioned to abut said first and second valve members, respectively, for defining a first predetermined spacing between each said valve head and respective said valve seat when the control valve is in the unactuated condition;

first and second second stop means provided in said first and second end portions, respectively, of said free piston assembly for abutting said large diameter portion of each said valve member and for thereby limiting the outward movement of each said valve member from the respective said end portion of said free piston assembly, each said second stop means and said large diameter portion of the respective said valve member being spaced by a second predetermined spacing when the control valve is in the unactuated condition;

each said shank of each said valve member having thereabout second spring means acting on the respective said valve head for urging said valve member away from the respective said free end portion of said free piston assembly;

first and second third stop means formed in said first and second valve bodies, respectively, for cooperation with said first and second end faces, respectively, of said free piston assembly and for defining a third predetermined spacing between each said end face and respective said third stop means when the control valve is in the unactuated condition, said third predetermined spacing being greater than said second predetermined spacing;

whereby during normal application of braking pressure, equal hydraulic pressure is supplied through both said first and second fluid passages, thereby operating equally on both said first and second valve bodies and on both said first and second end portions of said free piston assembly; and

whereby when failure occurs in said first fluid passage, said hydraulic pressure in said second fluid passage acts against said second end portion of said free piston assembly and causes said free piston assembly to move toward said first valve body until said first end portion of said free piston assembly abuts said first third stop means, and thereby increasing said first predetermined spacing between said second first stop means and said valve head of said second valve member.

4,284,309
BRAKE CONTROL VALVE HAVING OPERATOR FEEDBACK

Wayne A. Hoefer, Blue Springs, Mo., assignor to Caterpillar Tractor Co., Peoria, Ill.

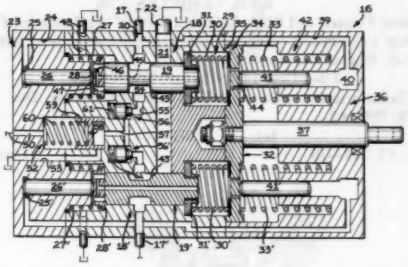
PCT No. PCT/US 79/00595 § 371 Date Aug. 13, 1979, § 102(e) Date Aug. 13, 1979, PCT Pub. No. WO81/00386, PCT Pub. Date Feb. 19, 1981

This PCT application filed Aug. 13, 1979, Ser. No. 93,078

Int. Cl.³ B60T *15/06, 13/18*

U.S. Cl. 303—50 **17 Claims**

10. In a control valve (18) having an inlet (20), an outlet (21), a valve member (19) movable between a closed position blocking communication between said inlet (20) and said outlet (21) and an open position communicating said inlet (20) with said outlet (21), first biasing means (30) for urging said valve member (19) towards its closed position under a predetermined closing force, input means (36) for applying a variable input force to said valve member (19) to reduce the closing force of said first biasing means (30), and second biasing means (33) for applying a progressively increased opposing force to said input force in response to actuation of said input means (36), said input means (36) including a common plate (32) mounted axially between said first (30) and second (33) biasing means, the improvement comprising



first (24) and second (39) passage means for communicating pressurized fluid from said inlet (20) to apply forces to opposite ends of said valve member (19) to urge it towards its open and closed positions, respectively.

4,284,310
ROTARY DRILL BIT

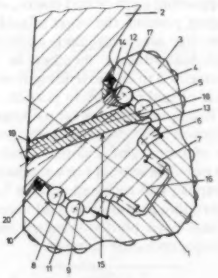
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter; Heinrich Kunkel, both of Schweinfurt, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to Sandvik AB, Sandviken and Aktiebolaget SKF, Gothenburg, both of, Sweden

Filed Aug. 3, 1979, Ser. No. 63,542

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1978, 7826323[U]

Int. Cl.³ F16C *19/18*

U.S. Cl. 308—8.2 **9 Claims**



1. A rotary drill bit assembly comprising a drill bit body, at least one trunnion formed integrally with the drill bit body, a rotary cutter rotatably supported on the trunnion by at least two rows of balls, said trunnion being a one-piece member, means defining a raceway groove formed integrally in the trunnion for each of the ball bearings, means defining a raceway groove in the interior peripheral surface of said rotary cutter for each of the ball bearings, both said ball bearing assemblies securing the rotary cutter against axial withdrawal from the trunnion, means defining filling ports in the drill bit body for each of the rows of ball bearings, each filling port terminating at its inner end in the corresponding raceway for one of the rows of balls, each filling port being separate and disposed in said trunnion at different angles, and a filler pin for

closing each filling port having a terminal end which complements the cross section of the raceway groove, said arrangement providding a trunnion construction which resists bending fracture during mounting and dismounting of the rotary drill bit so it is able to withstand heavy axial impact loads.

4,284,311

MECHANICAL CENTRAL BUFFER COUPLING FOR RAIL VEHICLES

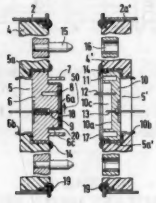
Hilmar Forster, and Klaus Ksienzyk, both of Wolfenbüttel, Fed. Rep. of Germany, assignors to Scharfenbergkupplung GmbH, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,017

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854962

Int. Cl.³ B60D *7/04*

U.S. Cl. 339—10 **6 Claims**



1. An electrical cable coupling, in particular for a mechanical buffer coupling of a rail vehicle, comprising, first and second coupling heads each including a contact carrier having a recess therein, at least one centering pin connected to one of said first and second coupling heads and at least one bushing connected to the other of said coupling heads engageable with said centering pin when said coupling heads are coupled to each other, a photoconductor insert detachably secured in each of said recesses, an elastic lining in each of said recesses for resiliently supporting each of said inserts, one of said inserts having a protruding portion, the other of said inserts having a recessed portion for receiving said protruding portion, a spring-loaded photoconductor member in said protruding portion, a lug connected to and extending from said one of said inserts on one side of said protruding portion, the other of said inserts having a fixed photoconductor member extending from said recessed portion and alignable with said spring-loaded photoconductor member, and a slotted guide plate over said recessed portion movable by said lug when said coupling heads are coupled to expose said recessed portion to permit engagement of said protruding portion into said recessed portion and engagement of said fixed photoconductor member with said spring-loaded photoconductor member.

4,284,312

SEALING TYPE ELECTRICAL CONNECTOR

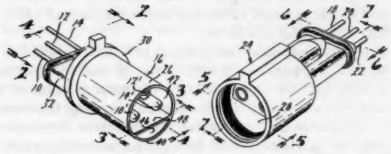
David R. Patchett, Milford; Warren J. Phipps, Drayton Plains, and Harry Zaverzence, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 972,132, Dec. 21, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 84,935

Int. Cl.³ H01R *13/52, 13/64*

U.S. Cl. 339—60 R **7 Claims**

1. A sealing type electrical connector comprising: a soft shell connector housing formed of a molded flexible elastomeric material; a hard shell connector housing formed of a molded rigid plastic material, the housings being configured to allow telescoping interaction together when assembled; each housing including an elongated, tubular walled outer portion closed at one end and open at the other and encircling an interior space, an inner plug portion of integral formation with the tubular walled outer portion radially spaced therefrom and extending axially forwardly from the closed end a distance less than the length of said tubular portion; an electrical contact member molded in the inner plug portion of the first connector housing for engagement with an electrical contact member molded in the inner plug portion of the other connector housing; an electrical conductor for each contact member molded in and extending rearwardly from the closed end of each connector housing; at least one housing being configured with dimensions of the tubular walled portions adapted to facilitate initial ease of insertion of a housing member within the other followed by



a progressively greater press fit therebetween as the housings further telescope together toward a fully assembled position with the ends of the plug portions abutting whereby increased insertion causes portions of the soft shell housing to distort; at least one radially extending sealing rib mold formed on the tubular walled portion of the soft shell housing adapted to engage the tubular walled portion of the hard shell housing and be compressed therebetween thereby acting as a barrier to seepage of water into the housing interiors.

4,284,313

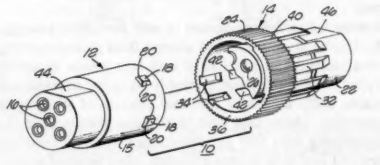
QUICK DETACHABLE ELECTRICAL CONNECTOR

John W. Anhalt, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,534

Int. Cl.³ H01R *13/62, 13/635*

U.S. Cl. 339—61 M **16 Claims**



1. A quick detachable electrical connector comprising:

first and second axially mating connector members;

said first connector member comprising a body having forwardly extending resilient hood means thereon, said hood means having a forward end surrounding said second connector member when said members are mated and a rear end fixed against rotation on said body;

said second connector member and said hood means embodying cooperating latch and recess means for releasably locking said members together;

said hood means being capable of torsional displacement relative to said body, and thus said second connector member;

said latch and recess means becoming disengaged upon said torsional displacement of said hood means whereby said connector members may be axially disengaged; and

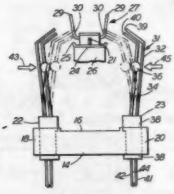
said latch and recess means automatically locking said members together upon axial mating of said members and without torsional displacement of said hood means.

4,284,314

TEST HEADS HAVING CONTACT PAIRS

Joseph N. Lesyk, Allentown, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,428
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 M **12 Claims**



1. A unitary test head having a plurality of uniformly flexible conductors ending in probe-contact pairs such that the contact spacing in one pair is mantained substantially the same as the contact spacing in each of the other pairs, comprising:

a plurality of spaced first conductors formed in one or more groups and aligned in a first row;

a plurality of spaced second conductors formed in one or more groups and aligned in a second row, each of said first and second conductors having a contact end and a circuit end and said second row being spaced from the first row such that each first conductor registers with a mating second conductor, thereby forming a plurality of contact pairs at the contact ends of the conductors;

a common base insulator formed transversely of and bonded to each of the first and second conductors at the circuit ends thereof such that said conductors and said rows are maintained in the aformentioned spaced relationships in an electrically insulated manner; and

a common bar insulator formed transversely of and bonded to each of the second conductors along a corresponding portion of each of said second conductors, said portion being located between the base insulator and the contact ends of the second conductors, such that the said bar insulator is separate from but bears upon the first conductors and maintains the contact spacing within the contact pairs and between each pair substantially uniform when the conductors are flexed toward a device to be tested.

4,284,315

CHAFF-FLARE TEST ADAPTER CONNECTING AND DISCONNECTING APPARATUS

Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107

Filed Apr. 16, 1979, Ser. No. 30,454
Int. Cl.³ H01R *13/621*
U.S. Cl. 339—89 M **8 Claims**

1. An adapter for use for testing the operation of an electrically actuated means having a plurality of electrical contacts and at least two threaded means comprising:

a base means,

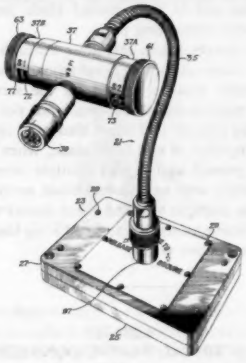
a plurality of electrical contacts carried by said base means for engaging said plurality of electrical contacts of said electrically actuated means,

at least two threaded members rotatably carried by said base means adapted to be threaded to said two threaded means respectively of said electrically actuated means,

a single rotatable control means carried by said base means and located to be rotated in first and second opposite directions,

first and second drive means coupled between said rotatable control means and said two threaded members respectively for rotating said two threaded members in a given direction when said control means is rotated in said first direction for threading said two threaded members to said two threaded means of said electrically actuated means and for rotating said two threaded members in a direction opposite said given direction when said control means is rotated in said second direction for unthreading said two threaded members from said two threaded means of said electrically actuated means,

said first and second drive means being characterized such



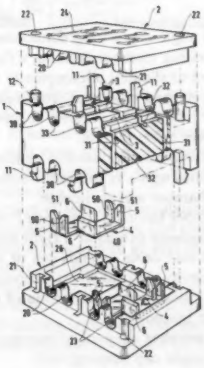
that if one of said threaded members is threaded to a tightened position before the other, said drive means associated with said one threaded member will allow said control means to continue to be rotated in said first direction for causing the other of said drive means to continue rotating its threaded member in said given direction to a tightened position.

4,284,316

TERMINAL BLOCK

Jean Debaigt, Maisons Laffitt, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed Oct. 11, 1979, Ser. No. 83,704
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—98 **3 Claims**



1. An automatic connection terminal block for connecting multiple wires end to end, said terminal block comprising:

an insulating box,

two independent and identical insulating covers for mounting to upper and lower surfaces of said insulating box,

said insulating box having pairs of adjacent, longitudinal channels on said upper and lower surfaces,

each cover having cut-outs aligned with channels, said cut-outs bearing connecting parts corresponding to said pairs

of adjacent longitudinal channels on said upper and lower surfaces of said insulating box, each connecting part having four blades, said blades being lined up two by two, said four blades being electrically interconnected,

each two lined up blades comprising a slotted blade and a knife blade,

said box bearing on said upper and lower surfaces a first transversal slot at each slotted blade location for said cover borne connecting part,

said first transversal slots extending through said insulating box and transversely of a longitudinal channel, and

a second blind transversal slot for the same longitudinal channel, said second blind transversal slot being sized to the cutting edge of said knive blade and closely receiving the cutting edge of said knife blade, when said insulating cover is pressed against said multiple wires presented to said channels with said slotted blade severing the insulation of the multiple wires to effect electrical contact with the conductive wire core, and said knife blades serving the ends of respective wires.

4,284,317

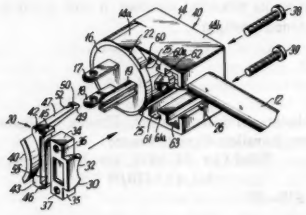
ELECTRICAL WIRING CONNECTOR

Richard C. Doyle, Greenlawn, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,793

Int. Cl.³ H01R *13/58*

U.S. Cl. 339—103 R **16 Claims**



1. An electrical angle cap wiring connector comprising:

an angle cap housing member defining a first front-opening cavity adapted to slidably telescopically receive a wiring chamber therein and a second front-opening and open-ended cavity adapted to receive an end portion of an electrical power cable therein,

said first and second housing cavities communicating interiorly of said housing so as to permit connection between said wiring chamber and said cable,

said wiring chamber having a front face from which electrical contact elements extend at a right angle to the direction in which said cable extends out of said open end of said second cavity defined by said housing, said wiring chamber front face forming a portion of the front face of said angle cap housing;

a single clamp member adapted to engage and clamp said cable to said angle cap housing; and

flexible and easily expandable cover means extending continuously between said clamp member and said first cavity defined by said angle cap housing,

said flexible cover means and said clamp member forming the remaining portion of the front face of said angle cap housing,

whereby said angle cap wiring connector is continuously closed along the front face thereof from said wiring chamber to said cable clamp member for all sizes of electrical power cable connected to said connector.

4,284,318

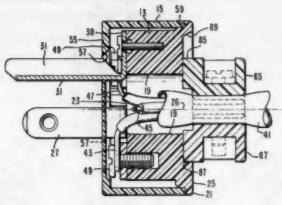
ELECTRIC PLUG

Roy O. Wiley, Huntington, and Bruce A. Samborski, Enfield, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 19, 1979, Ser. No. 21,653

Int. Cl.³ H01R *13/595*

U.S. Cl. 339—103 C **4 Claims**



1. An electric plug for use at the end of an electric cord, comprising

a base and cover each comprised of an electrically insulating material,

the base including first and second end surfaces and having opening means therebetween for an electrical cord,

two conductor prongs extending from the second end surface,

the cover comprising a tubular wall, an open end, and an opposite closed end wall which end wall has prong-receiving apertures,

the tubular wall enclosing the base with the closed end wall adjacent to the second end surface and with the prongs extending through the apertures,

the first end surface closing the open end of the cover;

locking means between the base and cover for holding the body and cover together,

cord-gripping means mounted on the first end surface and comprising post means and cord clamping means,

the post means extending from and being integral with the base,

the cord-gripping means comprising a pair of cord-clamping member attached to the post means and having interengaging means between the clamping members for gripping an electric cord, and

the base and the cord-clamping members comprise interfitting keys and keyways to prevent excessive twisting of the cord.

4,284,319

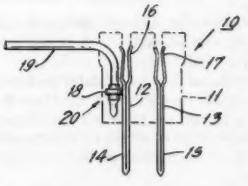
CRIMP FUSE

Elliot Bernstein, Rockville Centre, N.Y., assignor to Bel Fuse Inc., Jersey City, N.J.

Filed Feb. 11, 1980, Ser. No. 120,278

Int. Cl.³ H01H *85/16*

U.S. Cl. 339—147 P **9 Claims**



1. A fused plug having a main body; a pair of prongs extending from said main body and a line cord having a pair of wires extending into said main body; each of said wires having an insulative sheath;

a fuse connection between at least one of said wires and one of said prongs; said fuse connection comprising a fuse wire, a first sleeve securing one end of said fuse wire to said line cord wire, and a second sleeve of electrically conductive material securing a second portion of said fuse wire remote from said one end of said fuse wire to the insulative sheath of said line cord wire; and an outer insulative sheath covering a portion of said second sleeve and said fuse wire between said one end thereof and said second portion thereof.

4,284,320

ELECTRICAL CONNECTOR

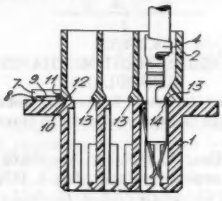
Lothar H. W. Nix, Walldorf, and John Heinrich, Rodgau, both of Fed. Rep. of Germany, assignors to AMP Inc., Harrisburg, Pa.

Filed Jul. 5, 1979, Ser. No. 55,090

Claims priority, application United Kingdom, Jul. 27, 1978, 31363/78

Int. Cl.³ H01R *13/506*

U.S. Cl. 339—200 R **5 Claims**



1. An electrical connector housing of resilient insulating material including first and second housing parts, the first part having a through cavity for receiving a contact portion of a terminal, and the second part having a through cavity for receiving a wire connecting portion of the terminal, the housing parts being assembled with the cavities in general alignment, the connector housing comprising, interengaging guide means integral with said housing parts including parallel guide rails on one said housing part and cooperating ribs on the other said housing part, wherein said guide rails slidably engage said ribs to allow for relative sliding movement transversely of the cavities between said first and second housing parts to permit adjustment of the alignment between said cavities, said interengaging guide means additionally preventing separation of said first and second housing parts in the direction longitudinal of the cavities, said housing parts being moveable to a relatively offset position in which a portion of said second housing part overlaps an edge of the cavity in said first housing part thereby forming a retaining shoulder for securing and positively engaging a terminal contact therein, and position indexing means for releaseably holding said housing parts in either of two relative positions, one of said positions being said relatively offset position.

4,284,321

ELECTRODE HEAD

Manfred Detemple, Hofheim, and Horst Huebner, Hochheim, both of Fed. Rep. of Germany, assignors to Schott-Geraete GmbH, Fed. Rep. of Germany

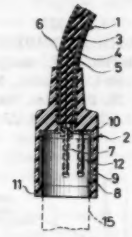
Filed Jun. 5, 1979, Ser. No. 45,618

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828248

Int. Cl.³ G01N *27/36;* **H01R** *17/18, 4/22*

U.S. Cl. 339—218 M **6 Claims**

6. A method for producing a measurement electrode head system for connection to an electrochemical potential measurement glass or plastic electrode rod, said electrode head including a one-piece electrode cap receivable directly on one end of the electrode rod, said cap also connecting to a coaxial cable having an outer shielding conductor and an inner conductor, comprising the steps of: providing a continuous cylindrical metal conductive layer having dimensions adapted to permit a tight fit over the glass or plastic end of the electrode rod; connecting the metal conductive layer at an end of the cable directly to the outer conductor of the cable; connecting the inner conductor of the cable to a connection pin adapted for solderless contact of a socket of the electrode rod which receives the pin; supporting the connection pin within the cylindrical metal conductive layer by a spacer element received in a smaller diameter cylindrical portion of the layer; placing the resulting assembly in a mould and overmoulding the assembly with a plastic jacket which extends over a portion of an end of the cable and over a substantial portion of the outer shielding conductor so as to hermetically seal the electrode head; and placing the completed one-piece cap over the end of the rod such that the cylindrical metal conductive layer is in a direct hermetic contact with a peripheral wall of the rod.



4,284,322

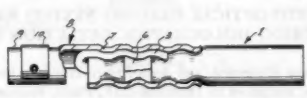
IGNITION CABLE TERMINAL CONSTRUCTION

James M. Keller, Burtchville, Mich., assignor to Eltra Corporation, Toledo, Ohio

Filed Dec. 6, 1979, Ser. No. 100,771

Int. Cl.³ H01R *11/08, 43/04*

U.S. Cl. 339—223 S **7 Claims**



1. A method of attaching a terminal to an ignition cable for use with internal combustion engines, said cable having a central resistive conductive core, an inner insulation layer concentric with said core and an outermost insulating layer concentric with and surrounding said inner insulation layer, comprising the steps of;

removing a portion of said inner insulation layer and of said outermost insulating layer from said conductive core for a predetermined distance from an end of said cable to form an exposed core end portion;

placing a narrow strip of conductive sheet material in contact with at least a portion of the circumference of said outermost insulating layer adjacent said core end portion;

bending said core end portion back over said sheet material; and

clamping a terminal ferrule over said core end portion, said sheet material and said outermost insulation layer to make direct electrical contact between said core end portion and said ferrule.

5. An ignition cable assembly having an outermost insulating layer, an inner insulating layer concentric with said outermost layer and a central resistive conductive core and a terminal ferrule fastened to said cable at an end thereof, characterized in that a predetermined length of said conductive resistive core is exposed at said end of said cable, a portion of said exposed core

is bent back over said outermost insulating layer, a narrow strip of conductive sheet material is interposed between said bent back portion of said exposed core and said outermost insulating layer, said sheet material, and said bent back portion of said exposed core to form a permanent electrical connection between said core and said ferrule, said sheet material being adapted to prevent plastic deformation of said cable due to elevated ambient temperature from affecting said electrical connection.

4,284,323

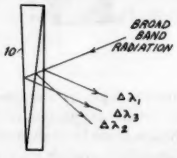
TRICHROIC MIRROR

Gerald Jankowitz, Hillsdale, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,912

Int. Cl.³ G02B 5/22

U.S. Cl. 350—1.6 **12 Claims**



1. A trichroic mirror comprising:

an optical wedge having a first multilayer dielectric interference filter disposed on a front surface of said wedge and a second multilayer dielectric interference filter disposed on a back surface of said wedge, said back surface being tilted in a given direction and at a given wedge angle with respect to said front surface; and

a reflecting element spaced from said back surface and tilted in a direction opposite said given direction and at an angle equal to said given wedge angle with respect to said front surface.

4,284,324

ACOUSTO-OPTICAL IMAGERY SYSTEM BASED ON COHERENT HOLOGRAPHIC DETECTION IN REAL TIME

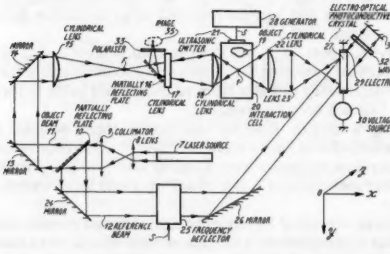
Jean-Pierre Huignard, and Jean-Pierre Herriau, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 20, 1978, Ser. No. 917,334

Claims priority, application France, Jun. 24, 1977, 77 19492

Int. Cl.³ G03H 1/02

U.S. Cl. 350—3.64 **5 Claims**



1. An acousto-optical imagery system based on coherent holographic detection comprising an optical source of pulsation ω_p, an electro-optical and photoconductive holographic recording crystal, a device forming a convergent cylindrical optical wave of pulsation ω_o from the wave emitted by the source, an ultrasonic cell containing a refractive fluid in which an object to be analyzed is placed, an ultrasonic wave emitter emitting an ultrasonic wave of pulsation ω_s, said ultrasonic wave passing through the object to be analysed, said ultrasonic wave and said cylindrical optical wave interacting in the cell to form, by BRAGG diffraction of the optical wave, diffracted orders containing the optical images of said object to be analysed, an additional optical device intended to supply a plane optical reference wave of pulsation $\omega_o+k\omega_s$, k being equal to $+1$ or -1, according to whether the diffracted order to be imaged is the order $+1$ or -1, said diffracted order and said plane optical reference wave being directed towards said crystal to form interference fringes in said crystal; said electro-optical and photoconductive holographic recording crystal having electrodes connected to a voltage source, a unit for reconstructing from the interference fringes stored in said crystal an image of said object in real time; said unit comprising means for supplying from said source a plane optical reading wave having the same pulsation and direction as the reference wave, but being propagated in the opposite direction thereto, and an optical device forming said image of the object in a viewing plane from the read out beam reconstructed from said crystal, the object thus being viewed in real time.

4,284,325

EYE SPAN ADJUSTMENT MECHANISM FOR BINOCULARS

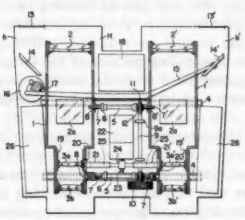
Isao Ishibai, Machida, and Kunimitsu Kobayashi, Higashimurayama, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 108,097

Claims priority, application Japan, Jun. 4, 1979, 54/68796

Int. Cl.³ G02B 7/06, 7/11, 7/12

U.S. Cl. 350—36 **4 Claims**



1. Binoculars including an eye span adjustment mechanism comprising a housing, a pair of lens barrels positioned within said housing, a pair of guide rails disposed laterally in said housing, at least one of said lens barrels being movable along said guide rails, and a pair of drive rods (5) in parallel with said guide rails and threadedly engaged with said lens barrels wherein said at least one said lens barrels is moved along the guide rails (4) in response to the rotation of the drive rods to vary the distance between said lens barrels.

4,284,326

APPARATUS FOR ELIMINATING EXTERNAL WEATHER EFFECTS FROM THE OBJECTIVE LENS SYSTEM OF AN AIMING PERISCOPE INSTALLED AT AN ARMED VEHICLE

Jörg Durrer, Oberengstringen, and Cornelius Mayer, Fällanden, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Mar. 13, 1980, Ser. No. 130,035

Claims priority, application Switzerland, Mar. 29, 1979, 2900/79

Int. Cl.³ G02B 23/08, 23/16

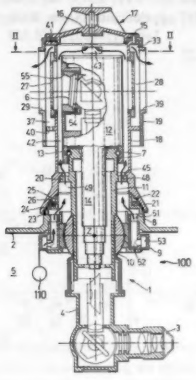
U.S. Cl. 350—63 **5 Claims**

1. An apparatus for repelling external weather effects from an objective lens system of an aiming periscope mounted in an

armed combat vehicle having a combat compartment, comprising:

an aiming periscope having a part protruding out of the combat compartment of the combat vehicle;

a protective hood surrounding said protruding part of said aiming periscope;



means providing air channels between said protective hood and said protruding part through which there can be conveyed an air current which flows past the objective lens system of the aiming periscope towards the outside;

means for generating an excess pressure in the combat compartment; and

said air channels being flow connected with the combat compartment which is at excess pressure.

4,284,327

MICROSCOPE WITH ATTACHABLE ILLUMINATING DEVICES

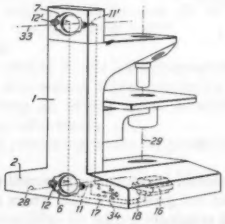
Winfried Kraft, Asslar-Werdorf; Robert Lisfeld, Greifenstein-Ulm; Willi Hagner, Solms-Oberbiel; Karl Wieber, Asslar, and Horst Frimmel, Wetzlar-Hermannstein, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,149

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902961

Int. Cl.[3] **G02B** *21/06, 21/24*

U.S. Cl. 350—87 **7 Claims**



1. A microscope adapted for accepting one or more attachment illuminating devices, which have different dimensions and are designed to be supplied with electric power either from a source within the microscope or external to the microscope, said microscope comprising:

a microscope stand comprising a base and a vertical support member extending from said base;

at least one internal supply of electrical energy located inside of said stand for powering an illuminating device;

first means, associated with said stand, for connecting any one of a variety of attachment illuminating devices which have different dimensions and are designed to be supplied with electric power either from said internal supply of electrical energy or from an electrical energy supply external to the microscope, said connecting means including means, adapted to cooperate with complementary coupling means on each attachment illuminating device, for mechanically coupling an attachment illuminating device, and means, adapted to cooperate with complementary electrical coupling means on each attachment illuminating device which is designed to be supplied with electrical energy from said internal supply of electrical energy, for electrically coupling said internal supply of electrical energy with an attachment illuminating device which is designed to be supplied with electrical energy from said internal supply of electrical energy, whereby said attachment means provide for direct standardized attachment of attachment illuminating devices having different dimensions without the use of any size adapting means; and

an intermediate mirror housing connected to said microscope stand by means of said first connecting means, said mirror housing comprising means for mechanically and electrically coupling said mirror housing to said first connecting means; second and third means, identical with said first connecting means, for connecting any of a variety of attachment illuminating devices which have different dimensions and are designed to be supplied with electric power either from said internal supply of electrical energy or from an electrical energy supply external to said microscope, and a mirror displaceably mounted in said mirror housing so as to selectively produce an optical connection between said microscope and either of the attachment illuminating devices connected to said second and third connecting means.

4,284,328

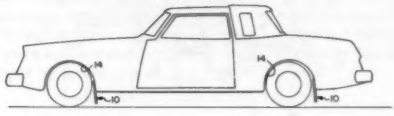
VEHICLE SAFETY FENDER TRIM

John W. Drews, 2172 Eastview Dr., Des Plaines, Ill. 60018

Filed Jan. 15, 1980, Ser. No. 112,345

Int. Cl.[3] **G02B** *5/12*

U.S. Cl. 350—97 **10 Claims**



1. A traffic signal fender trim member for motor vehicles comprising a substantially flat, flexible body member having a bottom edge, an outermost edge intended to extend vertically away from said bottom edge when said signal trim member is secured to a motor vehicle, said outermost edge having spaced tab members extending laterally therefrom, the space between adjacent ones of said tab members exceeding the vertical dimension of said tab members, and light reflective targets provided on said spaced tab members.

4,284,329

LASER GYROSCOPE SYSTEM

Irl W. Smith, and Terry A. Dorschner, both of Newton, Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 868,096, Jan. 3, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 51,557

Int. Cl.[3] **G02F** *1/09;* **G01B** *9/02*

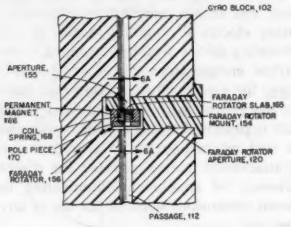
U.S. Cl. 350—375 **6 Claims**

1. A Faraday rotator element for a laser gyroscope comprising in combination:

a base support member having an aperture therein;

a permanent magnet having an aperture therein, said aperture in said permanent magnet being aligned with said aperture in said base support member;

a slab of rare earth-doped glass, said slab being positioned within said aperture in said permanent magnet, said slab and said permanent magnet being supported by said base member;



a spring, said spring holding said slab against said base member; and

a retaining member for said spring, said retaining member having an aperture therein aligned with said apertures in said base support member and said permanent magnet.

4,284,330

ADVANCE MECHANISM FOR CLOSE-UP LENS

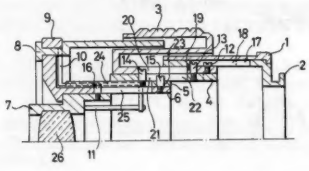
Shinsuke Komoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 26,968

Claims priority, application Japan, Apr. 11, 1978, 53-42358

Int. Cl.³ G02B *7/02*

U.S. Cl. 350—255 **5 Claims**



1. In a close-up lens cylinder having at least an attaching cylinder (**2**) for attachment to a camera body, an operating ring (**3**) for operating an advance for focussing, an advancing cylinder (**4**) for a straight advance and a lens frame (**7**) for supporting a lens, the improvement comprising; an advancing groove (**17**) divided into a circumferentially extending groove (**17A**) and a second groove (**17B**), said advancing cylinder (**4**) provided with an advancing groove (**21**) divided into a circumferentially extending groove (**21A**) and a cam groove (**21B**), said advancing cylinder (**4**) further provided with an elongated straight guide channel (**22**), and a rotating cylinder (**5**) mounted for rotation around the inner surface of said advancing cylinder (**4**), said rotating cylinder (**5**) having a circumferentially extending groove (**23**) and an advancing groove (**24**), and a cam member (**14**) engaging the advancing groove (**21**) of said advancing cylinder (**4**) wherein by rotating said operating ring, initially only said lens frame is advanced with respect to said attaching cylinder without advancing of said operating ring and said advancing cylinder and after said advance is substantially completed, said operating ring and said advancing cylinder are advanced together with said lens frame.

4,284,331

PHOTOGRAPHIC OBJECTIVE HAVING A FOCUSING CONTROL WITH PREVENTION OF CHANGE IN ANGULAR FIELD OF VIEW

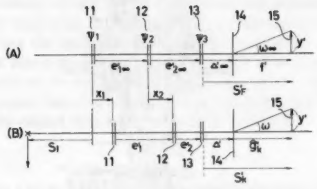
Kazuo Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1979, Ser. No. 21,684

Claims priority, application Japan, Mar. 23, 1978, 53-33475

Int. Cl.³ G02B *15/14*

U.S. Cl. 350—427 **1 Claim**



1. A photographic objective having focusing means with prevention of change in angular field of view comprising:

a first lens group arranged in a frontmost object space and movable for focusing;

a second lens group arranged on the image side of said first lens group and movable for focusing, wherein the amount of the movement x_2 of said second len group for focusing being in accompaniment with the amount of the movement x_1 of said first lens group, the amount of movement x_2 being almost equal to:

$$x_2 = x_1 - e'_{1\infty} + \frac{1}{\psi_1} + \frac{B^* - D^*\Delta'_\infty}{A^* - C^*\Delta'_\infty} - \frac{1}{\psi_1(A^* - C^*\Delta'_\infty)}$$

where

$$A^* = -\Psi_2 e'_2 + 1$$

$$B^* = -e'_2$$

$$C^* = -\Psi_2\Psi_3 e'_2 + \Psi_2 + \Psi_3$$

$$D^* = -\Psi_3 e'_2 + 1$$

$$e'_2 = e'_{2\infty} - x_2$$

$e'1_\infty$: the interval between the principal points of the first and second lens groups in a state where the optical system is focused at infinity;

$e'2_\infty$: the interval between the principal points of the second and third lens groups in a state where the optical system is focused at infinity;

Ψi: the power of the i-th lens group;

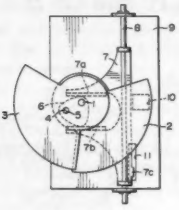
Δ'_∞: the distance from the rear principal point of the third lens group to the rear principal point of the entire optical system in a state where the system is focused at infinity; and

a third lens group arranged on the image side of said second group and stationary during focusing.

4,284,332
SHUTTER MECHANISM FOR MOTION PICTURE CAMERAS

Jiro Sekine, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 609,074, Aug. 29, 1975, abandoned. This application Apr. 5, 1977, Ser. No. 784,821
Claims priority, application Japan, Sep. 3, 1974, 49/101677
Int. Cl.³ G03B 9/10
U.S. Cl. 352—208 **7 Claims**



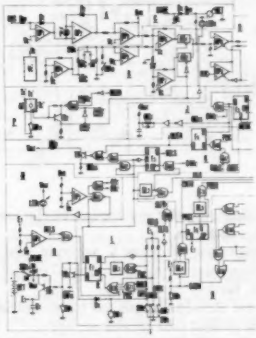
1. A rotary shutter mechanism for a motion picture camera comprising a first sector blade having an open angle rotatable about an axis to open and close an exposure aperture of the camera, a second sector blade having an open angle rotatable about said axis to open and close the aperture, an end plate extending in parallel with and in front of said sector blades, pin-and-hole engaging mechanical means for connecting the second sector blade with the first sector blade to form an open angle thereby which is smaller than the open angle of the first sector blade so that both blades rotate together to effect a shorter exposure time, and pin-and-hole engaging mechanical means for separating the second sector blade from the first sector blade and connecting the second sector blade with the end plate to hold it stationary at a position where the second sector blade fully opens said aperture so that only the first sector blade opens and closes the aperture to effect a longer exposure time.

4,284,333
EXPOSURE CONTROL DEVICE FOR CAMERA

Masaharu Kawamura, Kawasaki; Yoshihiro Shigeta, Tokyo; Masanori Uchidoi, Yokohama; Yoji Sugiura, Yokohama, and Hiroshi Yamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,544, Jun. 8, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,347
Claims priority, application Japan, Jun. 15, 1977, 52-70748
Int. Cl.³ G03B 7/093
U.S. Cl. 354—23 D **4 Claims**

1. An exposure control device for a camera comprising:
photographing information signal producing means, said means producing an analog signal in accordance with photographing information;
constant voltage producing means for producing a constant voltage;
standard voltage producing means for producing a standard voltage;
an operational amplifier to whose inverting input terminal the analog signal and the constant voltage are applied and to whose non-inverting input terminal the standard voltage is applied;
a condenser connected between the inverting input terminal and the output terminal of the operational amplifier, said condenser being charged when the analog signal is applied to the operational amplifier and discharged when constant voltage is applied;
a comparator to whose first input terminal the output of the operational amplifier is applied and to whose second input terminal the standard voltage is applied, said comparator being inverted when the output of the operational amplifier reaches the standard voltage;
first switching means, provided between the photographing information signal producing means and the inverting terminal of the operational amplifier, for forming a charging path for the condenser when said first switching means is actuated;
second switching means, provided between the constant voltage producing means and the inverting input terminal of the operational amplifier, for forming a charging path for the condenser when said second switching means is actuated;
pulse producing means for producing pulses;



a counter for counting the number of pulses from the pulse producing means and for stopping the counting, when the inverted signal from the comparator is applied, so as to produce a signal for controlling the exposure;
said counter producing alternatively a signal for actuating the first switching means and a signal for actuating the second switching means;
reset-enable-signal producing means for producing a signal enabling the resetting of the counter for a certain determined time from the release operation start; and
gate means for resetting the counter, being applied with the inverted signal from the comparator when the reset-enable-signal is being applied, the condenser being discharged down to the standard voltage when the counter has been reset by means of said gate means.

4,284,334
CIRCUIT ARRANGEMENT FOR THE COMPENSATION OF THE TEMPERATURE COEFFICIENT OF SEMICONDUCTOR JUNCTIONS

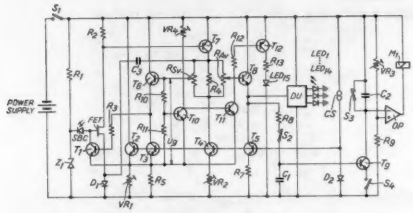
Rolf Magel, Fernwald, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,939
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822035
Int. Cl.³ G03B 7/083, 7/22; G05F 3/16
U.S. Cl. 354—24 **6 Claims**

1. An arrangement for compensating a temperature coefficient of a semiconductor junction connected in a circuit comprising:
first, second, and third transistors of the same predetermined type, each having a base-emitter junction; means operatively connected to said transistors for providing a respective collector current; and
a resistive voltage divider having two ends and a center tap, wherein said transistors and said divider are operatively connected such that the voltages of the base-emitter junctions of the first and second transistors are summed and applied across the ends of said voltage divider, the voltage from one said end to said center tap connected across the

base-emitter junction of said third transistor, whereby the collector current of said third transistor corresponds to a geometric mean of the respective collector currents of said first and second transistors and is substantially less temperature-dependent than the collector current of said first transistor.

5. The arrangement of claims **1**, **2**, **3**, or **4**, wherein the base of said first transistor is coupled to the emitter of said second transistor, the base of said second transistor is coupled to one end of said voltage divider, the base of said third transistor is coupled to the center tap of said voltage divider, and the other



end of said voltage divider is coupled to the emitters of said first and third transistors.

6. The arrangement of claim **5**, wherein said circuit comprises an exposure measuring and control circuit for a photographic device, further comprising:

a photoelectric element connected for providing the collector current of said first transistor; and

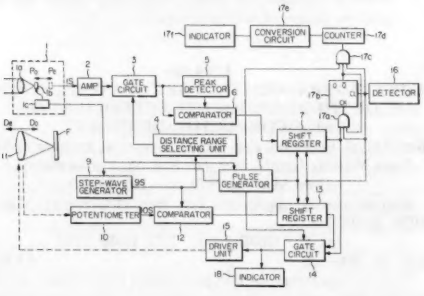
circuit means coupled to the base of said second transistor for controlling a shutter of said photographic device, said circuit means having manually-adjustable means for input of aperture and film sensitivity information.

4,284,335

FOCUS DETECTING APPARATUS

Mikio Takemae, Yokohama, and Hiroaki Tanaka, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 16,164
Claims priority, application Japan, Feb. 24, 1978, 53-19624
Int. Cl.[3] **G03B** *3/10*
U.S. Cl. 354—25 **8 Claims**



8. An automatic focusing apparatus comprising:

(1) an image forming lens system for forming the image of an object on a predetermined surface;

(2) distance selecting means extraneously operable to select a desired distance range within the focusable distance range of said image forming lens system;

(3) range finding means for measuring the distance between an object within the selected distance range and the automatic focusing apparatus in accordance with the output of said distance selecting means; and

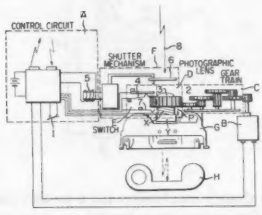
(4) means connected to said range finding means for focusing said image forming lens system to an object within the selected distance range in accordance with the output of said range finding means.

4,284,336

AUTOMATIC FOCUSING CAMERA

Hiroshi Iwata, Nara, and Wataru Hasegawa, Sakai, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Oct. 18, 1979, Ser. No. 86,073
Claims priority, application Japan, Oct. 26, 1978, 53/132169
Int. Cl.[3] **G03B** *3/10, 17/38*
U.S. Cl. 354—25 **3 Claims**



1. An automatic focusing camera capable of automatically measuring the distance to an object and focusing the image of said object, characterized by the provision of

(a) a power supply control means for controlling the power supply from a power source,

(b) a distance measuring means for measuring the distance to said object,

(c) a lens shift means for continuously shifting a lens between the minimum focusing distance position and the infinity position,

(d) a lens position sensing means for sensing the position of said lens, and

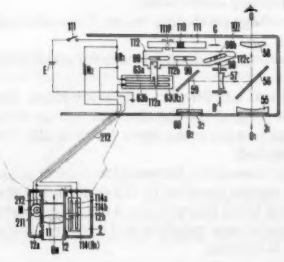
(e) a shutter control means responsive to both the signals from said distance measuring means and said lens position sensing means for controlling the release of a shutter, whereby said shutter may be released while said lens is being shifted.

4,284,337

PHOTOGRAPHIC APPARATUS

Fumio Ito, and Mutsunobu Yazaki, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 819,571, Jul. 27, 1977, Pat. No. 4,184,759. This application Mar. 23, 1979, Ser. No. 23,274
Claims priority, application Japan, Jul. 30, 1976, 51-91093
Int. Cl.[3] **G03B** *3/10, 7/08, 17/04, 17/50*
U.S. Cl. 354—25 **5 Claims**



1. A photographic apparatus and system comprising:

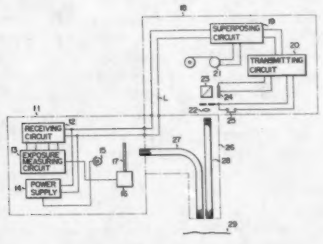
(a) a rear housing having a photosensitive material receiving chamber into which a photosensitive material is loaded;
(b) a front housing have:
a photographic lens optical system; and
a photographic lens optical system position adjusting means for moving manually at least a part of said photographic lens optical system along an optical axis of said optical system to adjust the position at which said photographic lens optical system forms an image on said optical axis;
(c) lens optical system position information output means for producing an electrical output corresponding to the movement of said movable lens optical system in said photographic lens optical system when said movable lens optical system is moved;
(d) optical distance measuring means including a movable optical means for measuring the distance from said distance to an object to be photographed;
(e) a motor for actuating said movable optical means;
(f) distance information output means for producing an electrical output corresponding to the movement of said movable optical means; and
(g) electrical circuit means connected to said lens optical system position information producing means and distance information producing means for driving said motor until the output of said lens optical system position information output means and the output of said distance information output means becomes a predetermined relationship.

4,284,338

PHOTOGRAPHING APPARATUS FOR AN ENDOSCOPE

Yuji Ikuno, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 119,008
Claims priority, application Japan, Feb. 14, 1979, 54/15628
Int. Cl.³ G03B *7/083;* A61B *1/04*
U.S. Cl. 354—32 **7 Claims**



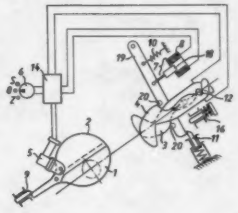
1. A photographing apparatus for an endoscope for making an automatic exposure photograph through the combination of a light source unit, an endoscope and a camera for endoscope photograph, wherein the camera for endoscope photograph includes a photosensing element for producing a photocurrent signal, a transmitting circuit for transmitting a release signal produced in response to the operation of a release switch and a modulated signal modulated by the photocurrent signal derived from said photosensing element, and a superposing circuit for superposing the modulated signal onto a motor drive line connected to a film wind motor, and the light source unit includes a demodulating circuit for demodulating the modulated signal transmitted from said transmitting circuit and an exposure measuring circuit for measuring an optimum exposure by using a demodulated signal from said demodulating circuit.

4,284,339

PROGRAMMABLE FULLY AUTOMATIC SHUTTER SYSTEM FOR PHOTOGRAPHIC CAMERAS

Kurt Borowski, Aschheim, and Josef Ganser, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,920
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754122
Int. Cl.³ G03B *7/00, 9/06*
U.S. Cl. 354—38 **8 Claims**



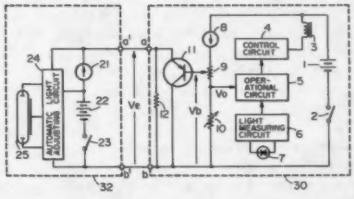
1. A shutter diaphragm mechanism, comprising:
a plurality of movable blades which can be moved towards and away from each other and can thereby decrease and increase a thickness of a beam of light passed between the blades in accordance with their movement;
a movable escapement mechanism cooperating with the blades to move them towards and away from each other;
a spring attached to the escapement mechanism and urging it to allow the blades to move away from each other; and
an adjustable damper attached to the escapement mechanism and opposing movement thereof, the adjustable damper including a fixed coil, a permanent magnet located within the coil and linked to the escapement mechanism in a manner that the magnet moves axially within the coil in response to movement of the escapement mechanism, and a variable resistance connected across the coil.

4,284,340

TEMPERATURE-COMPENSATED SIGNAL TRANSMITTING DEVICE

Yoshiaki Ohtsubo, Kawasaki, and Sakuji Watanabe, Warabi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,980
Claims priority, application Japan, May 1, 1979, 54/52473
Int. Cl.³ G03B *7/02, 15/03*
U.S. Cl. 354—50 **7 Claims**



1. A camera having means for arbitrarily selecting the exposure condition of a film thereby to generate a signal based on said selection, said signal representing exposure information and having a temperature coefficient, and exposure time determining means for determining the opening time of the shutter of the camera on the basis of said signal, said exposure informa-

tion being produced for a speed light during photography using said speed light, the improvement comprising:

signal transmitting means for receiving the signal of said exposure information as input and transmitting said exposure information to said speed light, said signal transmitting means having a transfer function including a temperature coefficient opposite in polarity to said temperature coefficient of said signal representing exposure information.

4,284,341

EXPOSURE CONTROL SYSTEM FOR SINGLE LENS REFLEX CAMERAS

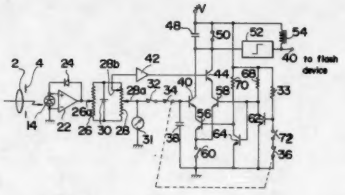
Seiji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 31, 1979, Ser. No. 62,507

Claims priority, application Japan, Aug. 9, 1978, 53-96847

Int. Cl.³ G03B *7/083, 7/089, 7/099*

U.S. Cl. 354—51 **13 Claims**



1. An automatic exposure control system for a single lens reflex camera having a reflex mirror and a focal plane shutter member, comprising:

first light measuring means for generating an output in response to the measurement of light from an object through the camera objective with the reflex mirror at a viewing position thereof;

storage means for storing said output;

release means for storing said output in response to a shutter release operation;

manually operable means for storing said output;

second light measuring means for measuring the light from the object passing through the camera objective and reflected by the surface of a film;

shutter control means for controlling the closure of said focal plane shutter member;

switch means for selectively connecting said shutter control means with said storage means and said second light measuring means, said switch means switching the connection from said storage means to said second light measuring means when said focal plane shutter member moves a given distance; and

prevention means for preventing the switching from said storage means to said second light measuring means when said manually operable means is operated.

5. An automatic exposure control system for a single lens reflex camera including an objective lens, a focal plane shutter member, and a reflex mirror movable between a viewing and a photographic position and having a semi-transparent portion, said system comprising:

photoelectric means receiving light from an object to be photographed through said objective lens and said semi-transparent portion of said reflex mirror with the latter at said viewing position, and receiving the light from the object passing through the objective lens and reflected from the film at the focal plane of said objective lens with said mirror at said photographic position;

light measuring means including said photoelectric means for generating a light signal as a function of the light received by said photoelectric means;

storage means for storing said light signal;

first interruption means for preventing said storage means from storing said light signal in conjunction with a camera shutter release operation;

delay means for delaying the closure of said shutter member; and

switch means for connecting said delay means with said storage means at the first stage of a camera exposure operation, and subsequently switching the connection of said delay means to said light measuring means when a given time has passed.

4,284,342

PHOTOGRAPHIC CAMERA WITH MULTI-PURPOSE EXPOSURE-PARAMETER ADJUSTER

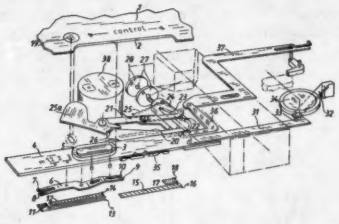
Rolf Schröder, Baldham; Dieter Engelsmann, Unterhaching; Peter Lermann, P. Feldkirchen/Westerham, and Rainer Spinnler, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,330

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841650

Int. Cl.³ G03B *7/00, 9/02, 17/00, 17/38*

U.S. Cl. 354—60 E **9 Claims**



1. A user-operable mechanism for varying an exposure parameter of a camera with a housing in order to adjust such parameter to correspond with ambient light conditions as determined by an electronic exposure computer in a manner that power to the computer can be turned on and off by operation of the mechanism and the camera will be disabled from exposing a frame when power to the exposure computer is turned off, the mechanism further operating in a manner that a user is informed when the power to the exposure computer is turned off and on by appearance and disappearance of an indicator located on the camera, comprising:

a control horizontally displaceable and vertically depressable by a user, the control sliding in an elongated slot in the housing between a first position and a second position;

a shutter button located on the camera housing;

an elongated slide connected to the control and movable therewith, the slide having a projection which is so located that when the control is located in the first position the projection interferes with motion of the shutter button so as to prevent a user from operating the shutter button while allowing the shutter button to be operated by a user when the control is displaced from the first position;

a first switch connected to the slide and the exposure computer and operating in a manner that when the control is in the first position the first switch is opened, and when the control is displaced from the first position the first switch is closed, whereby power to the exposure computer is turned on and off in response to displacement of the control;

a light-transmitting window located on the housing;

a plaque upon which a visual indication is located, the plaque being located so that the indication is viewable through the window; and

a flag connected to the control and movable with displacement thereof, the flag being interposed between the window and the plaque when the control is in the first posi-

tion and being uninterposed therebetween when the control is displaced from the first position.

4,284,343

APPARATUS FOR THE ELECTRIC LEVEL CONTROL OF A DEVELOPING SOLUTION IN A STORAGE TANK

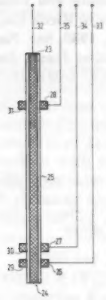
Martin Junghanns, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,198

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835413

Int. Cl.³ G03D *5/06*

U.S. Cl. 354—318 **6 Claims**



1. An apparatus for monitoring the level of a developing solution contained in a storage tank and used for developing in a development device comprising:

electrodes positioned inside said storage tank,

said electrodes having active surfaces positioned at different levels in said tank and exposed to the developing solution for the conduction of electrical current,

at least one of said electrodes having its active surface positioned at a level height of the developing solution at which a signalling action is started, and another one of said electrodes having an active surface substantially always positioned, when operative, within said developing solution thus serving as a reference electrode,

an elongated body member having an insulating circumferential material thereon, at least said non-reference electrodes being annular and spacedly disposed around said elongated body member, and

an electric switching circuit connected to said electrodes for triggering the signalling action as a function of the electric resistance between the electrodes.

4,284,344

ELECTROPHOTOGRAPHIC DENSITY CONTROL

Hiroshi Okamoto, Toyokawa; Tetsuya Yamada, Aichi; Fumitoshi Atsumi, Shizuoka, and Isao Iizaka, Shinshiro, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1979, Ser. No. 59,177

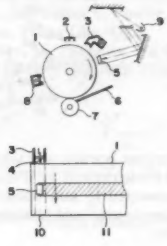
Claims priority, application Japan, Jul. 27, 1978, 53/92300

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 E **6 Claims**

1. In an electrophotographic copying apparatus which at least comprises a photosensitive member having a photoreceptor surface thereon while being rotatable in one direction; a corona charging means for charging said photoreceptor surface therewith; a light radiation means for illuminating a surface of an original to be copied therewith; an optical arrangement for introducing an imagewise light to an exposing station positioned at a predetermined position along and apart from a circumferential path of said photoreceptive member; and an erasing means for erasing the residual electrical charge on said photoreceptor surface therewith while being positioned relatively prior to the position of said corona charging means with respect to the direction of rotation of said photoreceptive member so that said residual electrical charge is electrostatically erased before the successive electrical charge is to be imparted with said electrically charging means, a photoreceptor charge control arrangement to be employed for said electrophotographic copying apparatus which comprises;

(a) a supplementary exposing means for projecting a predetermined amount of light onto a predetermined circumferential portion of said photoreceptor surface having been already electrically charged with said corona charging means, said supplementary exposing means being positioned between said position of said corona charging means and said position of said exposing station while being along and apart from said circumferential surface of said photoreceptive member, said predetermined amount



of light being equivalent to a specific amount of light radiated from said light radiation means for substantially reproducing the original portion having the image density of the minimum reproducible level for a respective copying process to be concerned;

(b) a surface potential detecting means for detecting the surface potential of said predetermined circumferential portion of said photoreceptor having been already exposed with said supplementary exposing means, said surface potential detecting means being placed at said exposing station and being disposed immediately before said position of said exposing station with respect to said direction of rotation; and

(c) a control circuitry means capable of controlling said amount of light to be given by said light radiation means in response to the variation of surface potential detected by said surface potential detecting means.

4,284,345

BLADE-TYPE CLEANING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Takashi Sugiyama; Masaya Ogawa, both of Osaka, and Hiroshi Murasaki, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1979, Ser. No. 71,794

Claims priority, application Japan, Sep. 19, 1978, 53-115256; Sep. 19, 1978, 53-115257; Apr. 13, 1979, 54-50010[U]

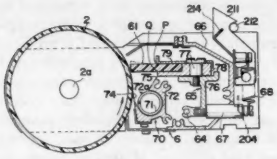
Int. Cl.³ G03G *21/00*

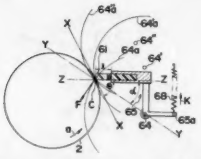
U.S. Cl. 355—15 **13 Claims**

1. In an electrophotographic copying apparatus, an improved blade-type cleaning device comprising: an elastic blade member which is held in pressing contact with the surface of an electrophotographic photoconductive member for removing residual toner from the surface during movement of the photoconductive member;

holder means for holding the blade member, said holder means being turnable about a support point for bringing the blade member into or out of contact with the surface and holding said blade member when it is in contact with the surface positioned at an angle θ defined by $65° \leqq \theta \leqq 85°$ relative to the portion of a tangent to the

surface through the point of contact between the blade member and the surface and which portion extends on the side of the blade toward which the uncleaned portion of said surface is moving, said support point lying on a line through said point of contact and on the same side of said





blade as said tangent portion and which is at an angle α relative to said blade defined by $0° \leqq \alpha \leqq 90°$; and

biasing means connected to said holder means for biasing said holder means to urge said blade member into contact with said surface.

4,284,346

ELECTROPHOTOGRAPHIC COPYING MACHINE

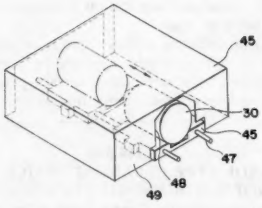
Hiroshi Ikeda, Aichi, and Seiichi Sakurai, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 9, 1979, Ser. No. 28,326

Claims priority, application Japan, Apr. 15, 1978, 53/44706

Int. Cl.³ G03B *27/54;* **G03G** *15/00;* **G03B** *27/34*

U.S. Cl. 355—67 **22 Claims**



20. An electrophotographic copying machine of a mirror scan type selectively operable in a plurality of magnification, which comprises, in combination:

an original support for supporting thereon an original to be copied;

a photo-receptor movable past an exposure station;

an optical projecting means positioned between the original support and the photo-receptor for forming an optical path for projecting an image of the original onto the photo-receptor at the exposure station, said optical projecting means including a movably supported projecting lens means, an exposure slit defining means and a scanning mirror assembly;

means connected to said projecting lens means for moving the projecting lens means for varying the magnification of the image of the original projected onto the photo-receptor by said optical projecting means between a first magnification and a second magnification by varying said optical path, said second magnification being smaller than said first magnification; and

1. A light shielding member fixedly positioned along said optical path in a non-interfering position relative to said optical path when said optical projecting means is projecting the image at said first magnification and in a position relative to said optical path for blocking part of the image light in a direction lengthwise of the exposure slit when said projecting means is projecting the image of said second magnification for controlling the pattern of distribution of light carrying the original image.

4,284,347

APERTURE-CONTROLLING DEVICE IN A VARIABLE-SCALE PHOTOCOPYING MACHINE

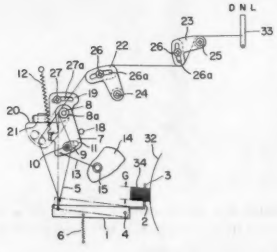
Shozo Shimomura, Yokohama, and Tadaaki Kanno, Yokosuka, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,316

Claims priority, application Japan, Jan. 30, 1979, 54/9547

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—71 **5 Claims**



1. In a variable-scale photocopying machine having a photosensitive medium, a light source, and an optical system including a scale-varying mechanism for varying the photocopying scale and operating to project light from the light source as an exposure light beam onto the photosensitive medium, the combination therewith of an aperture-controlling device comprising:

an aperture-adjusting mechanism for adjusting the width of the exposure light beam;

a flexible filament structure in tensioned state connected at one end to the aperture-adjusting mechanism for adjusting actuation thereof and passed at an intermediate part thereof around a guide, whereby a span of the filament structure is formed between the aperture-adjusting mechanism and the guide;

an aperture-adjusting member engaging the filament member and being movable in opposite first and second directions to adjustably deflect the filament structure at a point of the span thereby to adjustably actuate the aperture-adjusting mechanism;

first biasing means for biasing the aperture-adjusting member in the first direction;

a stationary stop against which the aperture-adjusting member is biased by the first biasing means in response to the operation of the scale-varying mechanism, the aperture-adjusting mechanism then being normally in an equal-scale position;

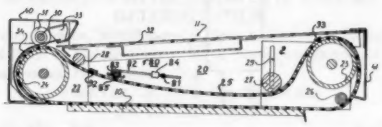
second biasing means for biasing the aperture-adjusting member in the second direction; and

an adjustable stop member which is positionally adjustable according to a photocopying scale other than equal scale, and against which the aperture-adjusting member is biased by the second biasing means in response to operation of the scale-varying mechanism, the aperture-adjusting mechanism then being in adjusted position for said photocopying scale.

4,284,348
ORIGINAL TRANSPORT SYSTEM FOR COPYING APPARATUS

Julius V. C. Graswinckel, Arcen, Netherlands, assignor to Oce-Nederland B.V., Venlo, Netherlands

Filed Sep. 18, 1979, Ser. No. 76,782
Claims priority, application Netherlands, Sep. 18, 1978, 7809451
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **20 Claims**

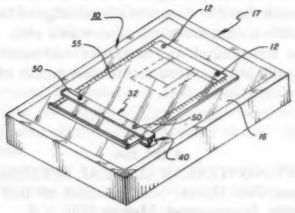


1. In an apparatus for transporting sheetlike originals past an exposure plate of a copying apparatus that includes at least two rotatably supported rollers, at least one endless transport belt extending about and positioned by said rollers, said belt having a lower flight that extends over said plate with one surface thereof coming into contact with said plate, and means for driving said belt, the improvement which comprises means for applying solid abherent means to said one surface of said belt which comes into contact with said exposure plate.

4,284,349
MEANS FOR IMAGING A LITHOGRAPHIC PLATE

Thomas T. Beasley, 300 Maple St., Rome, N.Y. 13440, and Brian G. Hanley, Box 22, Prospect, N.Y. 13435

Filed Jun. 7, 1979, Ser. No. 46,214
Int. Cl.³ G03B *27/02*
U.S. Cl. 355—79 **6 Claims**



1. A layout board for use in carrying out a lithographic step and repeat process wherein one original containing information to be reproduced is mounted upon a strip sheet so that the sheet can be further used to provide two independent images upon a single lithographic plate having mounting holes along the top and bottom margins that are spaced apart at one-half inch intervals, the board including

a base section having a work surface that is light transmitting and two parallel guide rails extending along the length of the work surface,

a central reference line inscribed on the work surface that is parallel with the guide rails and which extends vertically along the length of the work surface,

a first pair of stationary registration pins that are coaxially aligned in the top of the work surface upon a common center line that is perpendicular to said central reference line, said stationary registration pins being equally spaced to either side of the central reference line and having a center distance that is some fixed multiple of the half-inch hole spacing contained in the plate,

a straight edge that is slidably mounted upon the work surface of the base section having a pair of slide members that ride in sliding contact against the side edges of the base section whereby the straight edge moves vertically along the work surface,

a second pair of raised registration pins mounted in the straight edge for movement therewith, said pins being equally spaced on either side of said central reference line and having a center distance equal to that of said first pair of registration pins whereby said first and second pair of pins are moved towards or away from each other as the straight edge is slidably repositioned on the work surface,

a horizontal reference line inscribed upon the base section that is aligned along the common center line of said first pair of stationary registration pins, and

a vertical scale inscribed along one of the side edges of the board containing a number of equally spaced graduations for permitting accurate positioning of the straight edge in regard to the horizontal reference line.

4,284,350
LASER GEOPHONE

Julian B. Coon; Bobby J. Thomas; William L. Chapman, all of Ponca City, Okla., and James C. Fowler, Burke, Va., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 14, 1979, Ser. No. 94,141
Int. Cl.³ G01P *3/36*; G01B *11/02, 9/02*
U.S. Cl. 356—28.5 **9 Claims**

1. A method for measuring the velocity of earth surface motion, comprising steps of:

generating and directing a coherent light beam toward a selected earth surface position;

reflecting said directed coherent light beam as a reference beam from a reflector at said position;

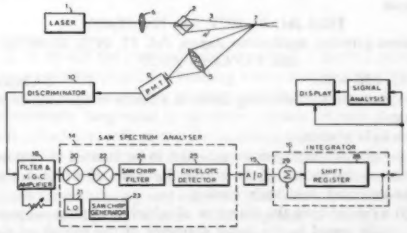
reflecting said directed coherent light beam as a signal beam from a second resiliently mounted reflector moving with vertical motion of said earth surface at said position; and

detecting said reflected beam, which includes both the reference and the signal beam reflection path components, to derive an instantaneous difference frequency that is proportional to velocity of the earth surface motion.

4,284,351
PROCESSING OF DIGITAL SIGNALS

Michael Alldritt, Worcester; Robin Jones, Malvern; Christopher J. Oliver, Malvern, and John M. Vaughan, Malvern, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 914,812, Jun. 12, 1978, abandoned.
This application May 21, 1980, Ser. No. 152,216
Int. Cl.³ G01P *3/36*; G01R *23/16*; H03K *5/00*
U.S. Cl. 356—28.5 **5 Claims**



1. A method of processing a digital electrical signal from a photon-counting detector composed of a train of discrete

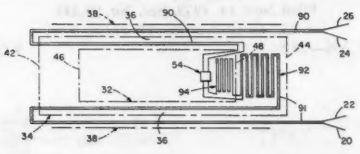
pulses each representing the detection of an individual photon, to recover spectral information contained in the spacings between the pulses, the method comprising the steps of applying the said digital signal to a surface acoustic wave (SAW) spectrum analyzer arranged to produce output signals which represent the power spectrum of constituent sample lengths of the digital signal over a selected frequency range, and integrating a plurality of said output signals to produce an integrated output signal representing the overall power spectrum, over at least a part of said selected frequency range, of a plurality of constituent sample lengths of the digital signal.

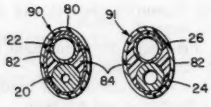
4,284,352

HEAT EXCHANGER FOR REFRACTOMETER

William W. Carson, Mendon, and John S. Roe, Millis, both of Mass., assignors to Waters Associates, Inc., Milford, Mass.

Filed Jun. 20, 1979, Ser. No. 50,326
Int. Cl.³ G01N *21/41*
U.S. Cl. 356—134 **26 Claims**





1. Apparatus for measuring changes in a physical property of a flowing fluid, comprising

a cell through which said fluid flows, said cell having an inlet and an outlet,

an inlet tube connected to the inlet of said cell, for delivering said flowing fluid to said cell, and

an outlet tube connected to the outlet of said cell, for transporting said flowing fluid away from said cell,

said inlet and outlet tubes being mounted in heat-exchanging relationship with each other, so as to transfer heat between the incoming and outgoing fluid and thereby reduce any temperature difference between the incoming fluid and the cell.

4,284,353

FLAW DETECTING APPARATUS

Hajime Yoshida, Chofu; Takashi Aoki, Sakai, and Kei Nishida, Tokyo, all of Japan, assignors to Hajime Industries Ltd., Tokyo and Nihon Pillow Block Mfg. Co., Osaka, both of, Japan

Filed Jul. 13, 1979, Ser. No. 57,419
Claims priority, application Japan, Jul. 17, 1978, 53/88799
Int. Cl.³ G01N *21/32*
U.S. Cl. 356—240 **5 Claims**

1. Apparatus for detecting flaws in a bottle or the like, comprising:

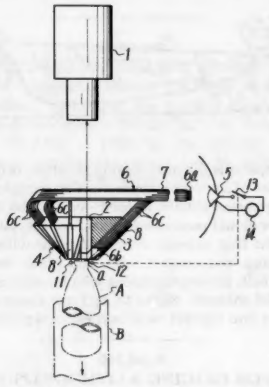
(a) a light source,

(b) a light projecting body adapted to be located in opposition to the mouth of the bottle, the flaws of which are to be detected, said body having

(i) a center bore the diameter of which is at least substantially equal to the outer diameter of the mouth of the bottle and,

(ii) a plurality of elongated passages extending through said body in communication with said center bore, the longitudinal directions of each of said passages being substantially coincident with a line tangent to a respective one of a number of uniformly spaced points lying on said center bore in a circle corresponding substantially to the peripheral edge of the mouth of said bottle,

(c) a plurality of optical fiber bundles, each of said bundles having one end facing said light source for transmitting light simultaneously through said bundles, and an other end extending through a respective one of said passages



to illuminate the corresponding portion of the peripheral edge of the mouth of said bottle with light incident thereon in a direction predetermined by the direction of said passage,

the number of said passages and associated fiber bundles being such that the entire peripheral edge of the mouth of said bottle is simultaneously illuminated and,

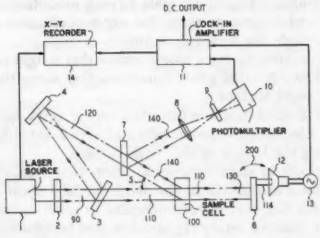
(d) means arranged along the axis of said central bore for sensing the image of the illuminated mouth of the bottle through said center bore.

4,284,354

SENSITIVE NONLINEAR OPTICAL SPECTROSCOPY

Paul F. Liao, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 24, 1979, Ser. No. 87,877
Int. Cl.³ G01J *3/44*
U.S. Cl. 356—301 **8 Claims**



1. Apparatus for sensitive nonlinear optical spectroscopic analysis of a sample which comprises:

means (**1, 3**) for generating at least two beams of radiation;

means (**4, 6**) for guiding said at least two beams of radiation to impinge upon said sample along a plurality of predetermined directions;

detector means (**7, 8, 9, 10**) for detecting radiation obtained

from said sample after irradiation by said at least two beams of radiation;

characterized in that

said apparatus further includes means (**12**, **13**, **14**) for modulating at least one of said predetermined directions at a predetermined modulating frequency, and wherein said detector means is sensitive to said modulating frequency.

4,284,355

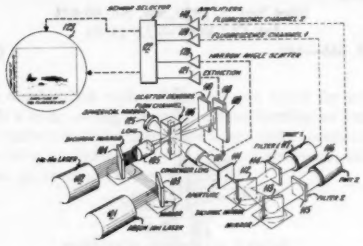
AUTOMATED METHOD FOR CELL VOLUME DETERMINATION

W. Peter Hansen, Middleboro; Robert A. Hoffman, Mansfield, and Peter J. Natale, Canton, all of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Oct. 29, 1979, Ser. No. 89,654

Int. Cl.³ G01N *21/17*

U.S. Cl. 356—335 **6 Claims**



1. A method of evaluating cell volume in a sample of cells comprising the steps of:

(a) suspending the cells of said sample in a medium including a dye which exhibits fluorescence response to select stimulation, and which is non-penetrating and substantially non-adherent to said cells;

(b) passing said medium through an optical flow cytometry sensing zone illuminated by said select stimulation;

(c) detecting reductions of fluorescent emissions from said sensing zone occasioned by passage of cells through said zone; and

(d) evaluating cell volume based on the amplitude of said detected reductions of fluorescent emissions.

4,284,356

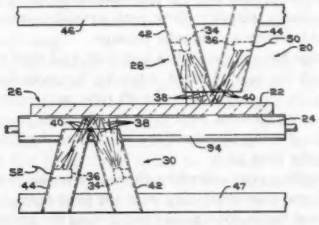
METHOD OF AND APPARATUS FOR COMPARING SURFACE REFLECTIVITY

Richard A. Heilman, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 26, 1979, Ser. No. 78,875

Int. Cl.³ G01N *21/86*

U.S. Cl. 356—429 **3 Claims**



1. A method determining if selected major surface of a glass sheet is properly oriented in a sheet movement path, wherein the glass sheet has a pair of opposed major surfaces having different reflectivity coefficients due to coating on at least one of the sheet surfaces, comprising the steps of:

advancing the sheet along the movement path with a major surface designated as a first sheet surface facing one side of the path and the other major surface designated as a second sheet surface facing the other side of the path;

impinging the first sheet surface and the second sheet surface with diffuse light beams of approximately equal intensity to reflect light beams designated as first reflected light beams from the first sheet surface and light beams designated as second reflected light beams from the second sheet surface;

impinging a portion of the first reflected light beams and of the second reflected light beams onto intensity sensing means after the portion of the first and second reflected light beams have traveled approximately equal distances;

comparing the intensity of the portion of the first reflected light beams to the portion of the second reflected light beams to determine the position in the path of the more reflective sheet surface; and

comparing the position in the path of the more reflective sheet surface to a desired position in the path for the more reflective sheet surface to determine if the sheet is properly oriented in the sheet movement path.

4,284,357

DEVICE FOR CONTINUOUSLY INSPECTING A SURFACE

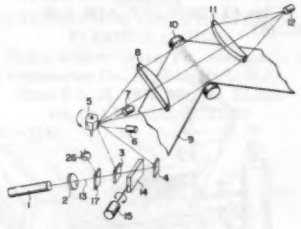
Hisashi Kudo, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 18, 1979, Ser. No. 104,950

Claims priority, application Japan, Dec. 27, 1978, 53/159963

Int. Cl.³ G01N *21/86*

U.S. Cl. 356—431 **9 Claims**



1. A device for continuously inspecting a surface comprising: a cylindrical roll for bending and conveying an object to be inspected, means for emitting a light beam in a direction substantially tangential to an outer surface of said object on said cylindrical roll, means for scanning said light beam in the widthwise direction of said object, means for receiving said light beam for producing an output signal in response thereto, means for comparing said output signal with a reference signal, a plane-parallel, transparent plate disposed in the path of said light beam prior to said surface, and means for varying an angle of inclination of said plate disposed in said light beam so that said light beam path is caused to follow variations in position of said surface of said object.

4,284,358
MIXING AND KNEADING MACHINE

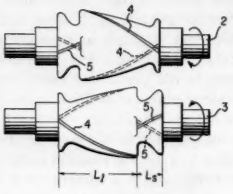
Norimoto Sato, Kodaira; Minoru Miyaoka, Hachioji; Shin Yamasaki, Tokorozawa; Kimio Inoue; Akimasa Kuriyama, both of Kobe; Tsugushi Fukui, Miki; Toshihiro Asai; Kazuhiko Nakagawa, both of Kobe, and Tatuo Masaki, Akashi, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo and Kobe Steel, Ltd., Kobe, both of, Japan

Filed Jun. 22, 1979, Ser. No. 51,001

Claims priority, application Japan, Jun. 23, 1978, 53/76687; May 18, 1979, 54/61917

Int. Cl.³ B29B *1/06;* **B01F** *7/00*

U.S. Cl. 366—97 **5 Claims**



1. A mixing and kneading machine including a mixing chamber defined by a casing comprising:

a pair of parallel rotors disposed within said casing, each of said rotors having at least one long vane and at least one short vane, both of which extend spirally about the center lines of the rotors such that material to be mixed flows from the edges of the rotors into the central portion thereof and in that a ratio of the length of the at least one short vane along the axis of each of the rotors to that of the at least one long vane is selected within the range of 0.48 to 0.1; and

means connected to said rotors for rotating said rotors in opposite directions.

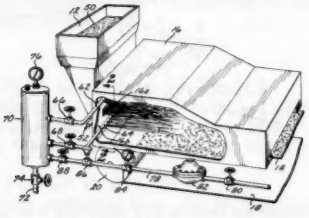
4,284,359
AGGLOMERIZATION SYSTEM FOR INTERMIXING EDIBLE INGREDIENTS

Theodore Rapolla, 7630 N. Glenoaks, Burbank, Calif. 91504

Filed Feb. 19, 1980, Ser. No. 122,507

Int. Cl.³ B01F *3/06;* **A23L** *1/00*

U.S. Cl. 366—107 **9 Claims**



1. An agglomerization system for intermixing edible ingredients comprising in combination:

means forming an agglomerization chamber having a movable bottom wall and provided with an end wall formed with an opening;

a hopper for dry edible ingredients at said end wall of said chamber including a manifold for dispensing through said opening said ingredients into said chamber under pressure; and

a steam system comprising a pair of steam discharge pipes on opposite sides of said opening and connected to a source of steam whereby said ingredients are intermixed within said agglomerization chamber with said steam.

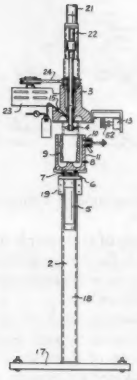
4,284,360
HOMOGENIZER/SUBSAMPLER FOR TAR SAND PROCESS STREAMS

Lubomyr M. O. Cymbalisty, and Robert C. Shaw, both of Edmonton, Canada, assignors to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; PanCanadian Petroleum Limited, Calgary; Esso Resources Canada Ltd., Calgary; Canada-Cities Service, Ltd., Calgary and Gulf Canada Resources Inc., Calgary, all of, Canada

Filed Nov. 5, 1979, Ser. No. 90,923

Int. Cl.³ B01F *7/22, 13/06*

U.S. Cl. 366—140 **4 Claims**



1. A homogenizer/subsampler comprising:

a discrete open-topped vessel for collecting a bulk sample from which it is required to take one or more representative analysis-size subsamples, said vessel having mounted therein a substantially coaxial draft tube spaced from the vessel side and base walls, thereby forming an annular passage;

support means comprising means for supporting the vessel;

a head element carried by the support means and operative to seal the top opening of the vessel;

means for bringing the vessel and head element together in sealing and closing engagement;

said draft tube, head element and vessel combining to form a substantially elliptical flow path extending through the draft tube bore and annular passage;

an impellor having a propellor and shaft, said shaft extending through the head element, whereby the propellor is positioned for operation in the draft tube, said shaft being in sealing engagement with the head element;

means for driving the impellor to circulate the bulk sample along the flow path;

a subsampling port extending through the side wall of the vessel and communicating with the flow path;

mechanical means for opening and closing the port for withdrawal of a subsample; and

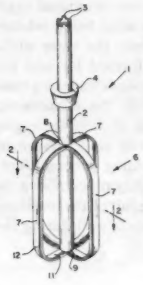
means for pressurizing the bulk sample to cause the subsample to be expelled through the port when said port is in the open position.

4,284,361

EGG FLUFFER

William M. Botts, P.O. Box 663, Bellevue, Wash. 98009

Filed May 9, 1980, Ser. No. 148,262
Int. Cl.³ B01F *13/00*
U.S. Cl. 366—343 **5 Claims**



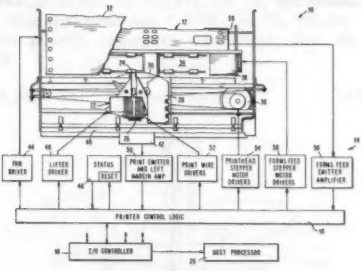
1. In combination with an egg albumen mixer for moving through a body of egg albumen, means forming an exposed copper surface on said egg albumen mixer, said exposed copper surface being positioned to contact the egg albumen as said egg albumen mixer moves therethrough.

4,284,362

PRINTER CONTROL LOGIC

Timothy Jackson, Coral Springs; Charles D. Malkemes, and William L. Zipoy, both of Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,254
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **28 Claims**



1. Control means for a printer having a matrix print head which bidirectionally moves across a record medium, said print head printing information on said medium by selective operation of the print elements of said print head, said control means comprising:

means for providing position signal sequences at periodic interim positions as said print head moves across said medium, the sequence of said position signals manifesting the direction said print head moves;

interruptable processor means responsive to an interrupt signal for being interrupted to provide a first control signal to selectively operate said print elements after being interrupted and to further provide a second control signal in response to said position signal sequence; and

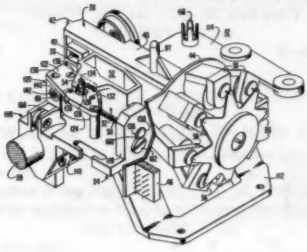
decoding means responsive to said position signals and said second control signal for providing said interrupt signal each time said position signal indicates said print head has reached a different interim position.

4,284,363

DATA MATRIX PRINT HEAD

John M. Choberka, Pompano Beach, and Donald K. Rex, Highland Beach, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,259
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **20 Claims**



1. In a dot matrix printer having a print head with a plurality of print wires, said print wires being actuated to cause dots to be printed on a record medium while said print head is laterally moved across said medium, the centers of said dots being separated by a given distance, the improvement for controllably rotating said print head to move the print wires an amount related to said given distance comprising:

frame means for rotatably holding said print head;

pin means extending from said print head having a given machined length of a precise amount parallel to the path or rotation; and

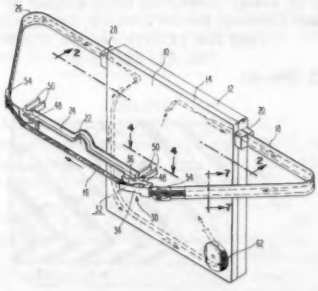
a bushing, including a machined opening of a precise distance having a top and a bottom, said bushing being affixed to said frame such that said pin means is positioned within said opening, said opening having a height along the path of rotation equal to said given length plus an amount to allow the ends of said wires to move said given distance as said pin means moves from one of said top or bottom of said opening to the other of said top or bottom of said opening.

4,284,364

RIBBON TENSIONING FOR A CARTRIDGE WITH FLEXIBLE GUIDES

Michael J. Rello, Willow Grove, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 21, 1979, Ser. No. 13,283
Int. Cl.³ B41J *32/02, 35/08*
U.S. Cl. 400—234 **12 Claims**



1. A ribbon cartridge for a printer comprising a ribbon storage area, flexible ribbon guide means for guiding said ribbon to and from a print point movable with respect to said

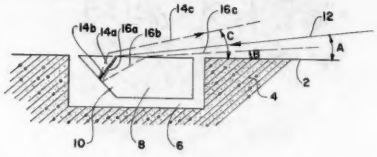
storage area and bridge means coupled to said guide means and movable with said print point relative to said storage area for supporting said ribbon at said print point, the improvement comprising tensioning means located on said bridge means.

4,284,365

REFLECTIVE LANE MARKER FOR ROADWAYS

Jacob Rabinow, Bethesda, Md., assignor to Hall & Myers, Washington, D.C., a part interest

Filed Feb. 22, 1977, Ser. No. 770,486
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—9 **5 Claims**



5. A roadway marker comprising

light refracting means having a light refracting portion including an upper surface,

mounting means adapted to be secured to the roadway, for carrying said light refracting means and positioning said upper surface to be a part of the surface of the roadway, and

reflecting means below said upper surface for receiving the light from an automobile headlight that impinged upon said surface and was refracted by said light-refracting means and for reflecting such light back toward said upper surface,

said reflecting means comprising means for reflecting light rays, passing from said upper surface to said reflecting means, back to said upper surface in the opposite direction that the rays passed on their way to the reflecting means,

said reflecting means having two reflectors for respectively reflecting essentially all of the light rays that passed from said upper surface and which came from the headlights of automobiles approaching in first and second opposite directions that impinges upon said upper surface,

characterized by:

said light refracting means comprising a prism,

said upper surface comprising one side of said prism,

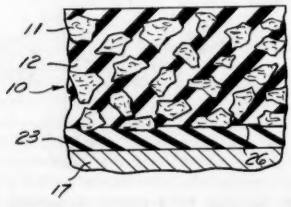
said reflecting means comprising at least one corner reflector outside of said prism and adjacent another side of said prism.

4,284,366

ELASTOMERIC COMPOSITE PAVEMENT

Dennis M. Lucik, Middlefield, Ohio, assignor to The Johnson Rubber Company, Burton Township, Geauga County, Ohio

Filed Jun. 11, 1979, Ser. No. 47,500
Int. Cl.³ E01C *5/22*
U.S. Cl. 404—44 **10 Claims**



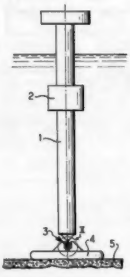
5. A molded paving block comprising an elastomeric composite body of predetermined thickness, said body comprising an elastomeric base and aggregate material dispersed in the base, the distribution of the aggregate being substantially uniform throughout the thickness of the block, said block having a molded wear surface at its upper face, the wear surface having a substantial fraction of its area formed by aggregate surface areas substantially free of any covering of the elastomeric base material, the individual aggregate particles providing said free surface areas being retained in said base material by embedment therein, the wear surface having its area remaining from that formed by said free surface areas being formed by the elastomeric base as a result of molding against a compliant cavity wall, the elastomeric base being excluded from said free surface areas of the aggregate by the interaction of the compliant cavity wall, elastomeric material and aggregate during the molding process, said free surface areas of aggregate being slightly raised above the surface of the elastomeric material as a result of the impression of such free surface areas into the compliant wall during the molding process.

4,284,367

MOVABLE-JOINT DEVICE FOR CONNECTING A SEA-BED EXPLOITATION COLUMN TO ITS BASE, CONNECTING AND DISCONNECTING PROCESSES USING THE SAID DEVICE, AND JOINT ELEMENT USED IN THE SAID DEVICE

Samuel Tuson, Mesnil-le-Roi, and Rene Loire, Paris, both of France, assignors to Enterprise d'Equipements Mecaniques et Hydrauliques, France

Filed Oct. 24, 1978, Ser. No. 954,209
Claims priority, application France, Nov. 4, 1977, 77 33233
Int. Cl.³ B63B *35/44*
U.S. Cl. 405—202 **16 Claims**



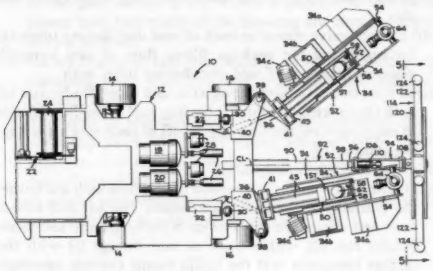
1. A universal movable-joint device for removably connecting a sea-bed exploitation column to its base arranged on the sea floor, said column comprising a shaft with a top end preferably emerging from the sea and a bottom end or foot located near the sea-bottom defining thereby an emerged upper part and a submerged lower part, said column being provided with a buoyant float means for biasing the shaft towards a substantially vertically extending position when the same is connected to said base, characterized in that said movable-joint device is essentially constituted by a joint element of resiliently deformable material interposed between the foot of the column and the base and connected to the said foot and base, respectively to removably joint said column to said base and to permit the free oscillation of the column with respect to its base under the action of sea heave or of the wind.

4,284,368

VEHICLE WITH DUAL DRILL BOOMS AND TEMPORARY ROOF SUPPORT

Charles D. Albright, Fairmont, W. Va., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 18, 1979, Ser. No. 4,429
Int. Cl.³ E21D *20/00*
U.S. Cl. 405—291 **7 Claims**



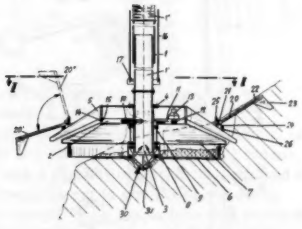
1. In a support for a mine roof having a base, a telescopic column mounted on the base, and a crossbeam connected to the column, the improvement comprising an expandable member on each side of the column having one end connected to the base and the other end connected to the beam at a point spaced from the column, and means to expand said members and raise the beam toward the roof.

4,284,369

TAKE-UP HEAD FOR BULK MATERIAL CONVEYOR INSTALLATION

Arnold Gsponer, Brunswick, Fed. Rep. of Germany, and Hans Schnitzer, Winterthur, Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 699,992, Jun. 25, 1976, abandoned. This application Aug. 9, 1978, Ser. No. 932,361
Claims priority, application Switzerland, Jun. 26, 1975, 8249/75
Int. Cl.³ B65G *65/28*
U.S. Cl. 406—52 **17 Claims**



1. A bulk material take-up head comprising:

(a) frame means including a substantially vertically disposed conveyor pipe adapted for connection to a source of suction and having a lower end terminating in a take-up aperture through which bulk material may be drawn;

(b) rotary feeder means mounted on the frame means for rotation relative to the take-up aperture, the rotary feeder means being constructed and arranged to engage and feed bulk material inward to the take-up aperture;

(c) drive means carried by the frame means for rotating the rotary feeder means;

(d) at least one anchoring member carried by the frame means, at least part of which extends outwardly relative to the take-up aperture and which can be raised and lowered to engage the bulk material remote from the rotary feeder means to resist rotation of the frame means;

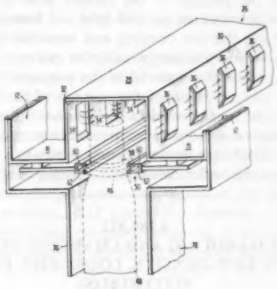
(e) and centering tip means carried by the rotary feeder means and rotatable therewith, the centering tip means projecting axially downward below the rotary feeder means and in coaxial relation with the take-up aperture for engaging the underlying bulk material to resist lateral movement of the take-up head, the centering tip means defining a free space below the take-up aperture through which bulk material may be communicated to the take-up aperture.

4,284,370

AIR CONVEYOR FOR BOTTLES AND BOTTLE PREFORMS

Richard W. Danler, 1235 Buchanan Dr., Santa Clara, Calif. 95051, and William L. Bilobran, 763 Lakebird Dr., Sunnyvale, Calif. 94086

Continuation of Ser. No. 961,380, Nov. 16, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,316
Int. Cl. B65G *51/02*
U.S. Cl. 406—86 **5 Claims**



1. An air conveyor for bottle members having a neck portion and a depending body portion comprising an elongated plenum chamber having an elongated bottom wall member joined to contiguous wall means for defining a plenum chamber for receiving pressurized air, means for supplying pressurized air to the plenum chamber, said bottom wall having an elongated slot therein, an elongated U-shaped channel member overlying said slot and defining a conveying path, a plurality of air slots in said channel member for admitting pressurized air jets into said channel from said plenum chamber, means for engaging and supporting each bottle member at its neck portion so that the neck of each bottle member is within said channel for receiving the propelling force of said jets whereby the bottles are conveyed along said path, a pair of confronting side curtains depending from opposite sides of the conveyor in close proximity to the body portion of said bottle members, and an opening defined by the bottom edge portions of the side curtains to exhaust air from said air conveyor.

4,284,371

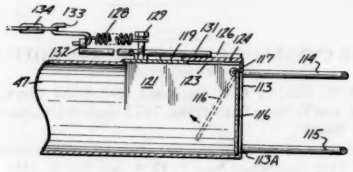
MATERIAL HANDLING SYSTEM

Jerome T. Paulson, Long Lake, and Lawrence C. Zylka, Dayton, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Filed Aug. 15, 1979, Ser. No. 66,574
Int. Cl.³ B65G *53/42*
U.S. Cl. 406—99 **31 Claims**

1. An apparatus for moving material comprising: pump means having a housing, said housing having a pump chamber, material inlet means open to the chamber, material outlet means open to the chamber, means within said chamber for moving material from the inlet means to the outlet means, suction hose means connected to the inlet means, said suction hose means having a passage and an inlet end, said inlet end

having an inlet opening and an exit opening, said exit opening located at the inlet end of the suction hose means whereby substantially all of the material in the passage of the suction hose means can drain out of said passage externally of the suction hose means, when the means within said chamber for moving material is inoperative, first means movably mounted on the inlet end for closing the inlet opening to restrict movement of material out of the passage of the suction hose means through the inlet opening, means movably mounting said first means on said inlet end for movement to an open position on



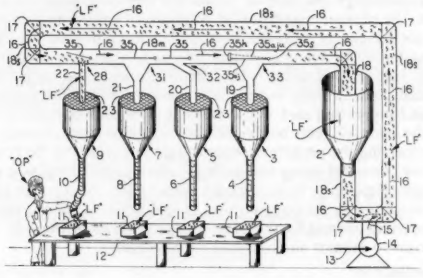
operation of the means within said chamber to allow material to flow into the passage of the suction hose means, second means movably mounted on said inlet end locatable in a first position closing the exit opening and movable from the first position to a second position opening the exit opening whereby substantially all of the material in the passage of the suction hose means can drain out of the passage of the suction hose means when the means within said chamber for moving material is inoperative, and discharge means connected to the outlet means, said discharge means having a passage for carrying material from the outlet means to a selected location.

4,284,372

EFFICIENT HANDLING AND CHARGING SYSTEM FOR EXPANDED, LOW-DENSITY, LOOSE-FILL PACKAGING MATERIAL(S)

Layle V. Smith, Pataskala, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 19, 1979, Ser. No. 95,697
Int. Cl.³ B65G *53/60*
U.S. Cl. 406—106 **20 Claims**



1. In a handling and dispensing system for filling containers and the like with expanded, low-density, loose-fill packaging material which is comprised of and wherein there are included:

(a) a main supply storage hopper for said loose-fill material; which is integrally in the circuit of

(b) a circulating system having at least a main header run for air-entrained conveyance of said loose-fill material out of and back into said main hopper (a); and

(c) air blowing means for entraining and carrying said loose-fill material through said circulating system (b); with

(d) a main header run in said circulating system (b) from which said loose-fill material is supplied and diverted; to

(e) at least a single packaging station in said system whereat said loose-fill material is dispensed for package filling and/or cushioning purposes; with

(f) each packaging station (e) having a separate holding and dispersing hopper for individual station supply of said loose-fill material; and

(g) each packaging station (e) having a distributing tube from its said holding hopper (f) to let out and dispense said loose-fill material for said packaging and cushioning purposes from each of said station holding hoppers (f); and also

(h) control valve means in each of said distributing tubes (g) for regulating the package filling flow of said loose-fill material from out of said distributing tube; with

(i) at least one diversion fitting(s) in said main header run (d) with (j) outlet(s) therein for feeding said loose-fill material to each separate holding hopper (f) at each single packaging station (e);

the improvement comprising:

(k) baffle means in each diversion fitting (i) which are within the confines of the said main header run (d) and situate over and above the entry of each outlet (j) into said main header run (d) within each of said fittings (i) with the further limitation that the baffle means extends upstream and downstream beyond lateral edges of the discharge outlet, whereby and whereupon

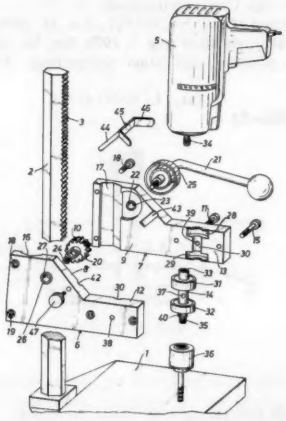
air-entrained loose-fill material is so deflected and diverted into each of said holding hoppers (f) as to at least substantially avoid if not entirely prevent plugging of said loose-fill material in said main header run (d).

4,284,373

WORKING STAND FOR NECKLESS ELECTRICAL HOME WORKER MACHINES

Robert Wolff, im Kiesacker, 5446 Engeln, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,277
Int. Cl.³ B23B *39/00, 47/00*
U.S. Cl. 408—87 **7 Claims**



1. A working stand for collarless electrical home worker machines, which machines have at the end of their drive shaft a threaded section for screwing on a drill chuck, comprising

a vertical guide column having a polygonal cross-section and a toothing,

a machine holder disposed moveably up and down said vertical guide column and fixable in position at any height on the guide column,

a gear mounted in said holder and engaging said toothing, said gear constituting means actuatable by a hand crank,

said machine holder comprises a pair of adjustable clamping jaws embracing said guide column,

a vertical shaft is rotatably mounted in said machine holder, said shaft on an upper end has an axially interior threaded section means for reception of the drive shaft of the machines and said shaft on its lower end has another threaded section means for screwing-on the drill chuck, said lower end of said shaft projects from the machine holder,

said machine holder comprises a housing formed of two housing shells, the housing being divided in a center plane of the gear or in a plane which is parallel to said center plane, both said shells of the housing are clamped rigidly to one another,

a rearward area of said two housing shells is formed as said clamping jaws, said clamping jaws embrace said guide column, and

a front area of said two shells is formed as another pair of clamping jaws, the latter being formed with annular grooves, said shaft is rotatably clamped in said another pair of clamping jaws,

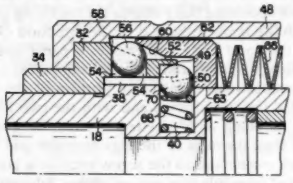
two axially non-displaceable roller bearings are disposed on said shaft and in said annular grooves.

4,284,374

ROTARY TOOL HOLDER

Chikara Senzaki, Nara, Japan, assignor to Manyo Tool, Nara, Japan

Filed Apr. 9, 1979, Ser. No. 28,392
Claims priority, application Japan, Jun. 8, 1978, 53-68291
Int. Cl.³ B23B *47/24*
U.S. Cl. 408—139 **10 Claims**



1. A rotary tool holder comprising:

a rotary sleeve member;

a cylindrical driven member received within said sleeve member and having a bore adapted to receive therein a rotary tool, a plurality of peripheral dents, and a plurality of recesses adjacent to said peripheral dents;

means for transmitting a torque from said sleeve member to said driven member, said means for transmitting a torque including rolling members engageable with said dents and two or more slots in said sleeve member, said respective rolling members being loosely fitted in said slots, said slots serving to displace said rolling members axially and circumferentially of said holder when rotation of said sleeve member is reversed;

a cup-shaped member disposed around said driven member, and having a wall surface convergent toward the axis thereof and engageable with said rolling members;

resilient means for urging said cup-shaped member against said rolling members; and

means disposed in the recesses in said driven member and adapted to releasably restrain the sliding movement of said cup-shaped member toward said rolling members.

4,284,375

ONE-LIP TOOL FOR DEEP DRILLING

Bruno Mühleisen, Wissgoldingen, Fed. Rep. of Germany, assignor to TBT Tiefbohrtechnik GmbH & Co., Dettingen, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,644
Int. Cl.³ B23B *31/44, 27/10, 51/00*
U.S. Cl. 408—226 **8 Claims**

1. A one-lip tool for deep drilling, comprising

a clamping sleeve;

a drill head having a drilling blade; and

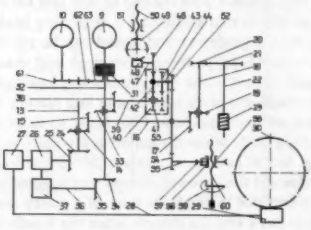
a drill shaft having an axis and two axial ends at one of which ends said clamping sleeve is arranged and at the other of which ends said drill head is arranged, said drill shaft having a peripheral surface including two diametrically opposite surface portions, said drill shaft having an axially extending chip groove in one of said surface portions and at least one projection in the region of the other of said surface portions, said projection forming a radially inwardly extending rib and terminating at an axial distance from said clamping sleeve and said drill head.

4,284,376

SPUR GEAR HOBBING MACHINE

Heinz Papistok, Karl-Marx-Stadt; Herbert Reuter, Weissbach, and Lothar Bachmann, Karl-Marx-Stadt, all of German Democratic Rep., assignors to Veb Werkzeugmaschinenkombinat "7. Oktober" Berlin, Berlin, German Democratic Rep.

Filed Mar. 14, 1979, Ser. No. 20,332
Claims priority, application German Democratic Rep., Mar. 10, 1978, 204090
Int. Cl.³ B23F *5/22*
U.S. Cl. 409—24 **2 Claims**



1. A hobbing machine for manufacturing gears, comprising a tool support; a blank support arranged for rotation about an axis so as to rotate a blank to be machined; a support carriage arranged for movement on the tool support in the direction of the axis of the blank support; a milling head arranged for movement on the support carriage and having means to rotatably support a hob; a drive for rotating the hob; a gear train for the hob and connected with the hob drive; a separate feed

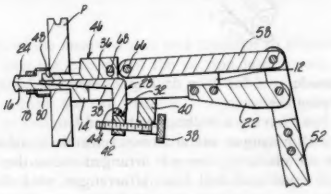
drive for the milling head; an axial feed gear train and a tangential feed gear train for the milling head for feeding the milling head in axial and tangential direction relative to the blank support axis; a branch gearing cooperating with the separate milling head drive and operable selectively to actuate the axial and tangential feed gear trains, said branch gearing being supported and arranged solely in the support carriage; and differential gears connected with the hob drive and the separate milling head feed drive.

4,284,377

PORTABLE KEY SEAT CUTTER

Bert W. Piper, 36051 Goddard Rd., Romulus, Mich. 48174, assignor to Bert William Piper, Belleville, Mich.

Filed Sep. 24, 1979, Ser. No. 78,641
Int. Cl.³ B23D *37/04*
U.S. Cl. 409—259 **5 Claims**



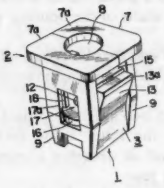
1. A key seat cutter for pulleys and the like comprising an elongated shank comprising a pair of flat plates spaced apart in parallel relation so that the opposed spaced apart faces form a guideway therebetween and a nose piece integrally connected to the forward ends of said plates, said nose piece comprising an enlarged boss having a flat front face and a threaded shaft projecting forwardly therefrom, said shaft being adapted to receive the bore of a pulley in which the key slot is to be cut, said nose piece having an axially extending slot therein which forms an axial extension of said guideway, said slot extending through said boss and said shaft in radial alignment with said guideway and having a straight, axially extending, bottom wall inclined at a small angle to the axis of the shaft, a feed bar in the form of an elongated wedge slideably arranged in said guideway and having a forward end portion seated on said inclined bottom face of said slot, said feed bar having an arm at its rear end extending laterally outwardly from the guideway, the top face of said feed bar extending parallel to the axis of said shaft, a thumb screw rotatably supported on said shank and in threaded engagement with the end of said arm for shifting said feed bar axially in said guideway, a broaching blade slideably arranged in said guideway and seated on the top face of said feed bar, a handle pivotally supported on said shank adjacent the rear end thereof, a link in said guideway having its rear end pivotally connected with said handle and having its forward end connected with said broaching blade so as to reciprocate the broaching blade when the handle is pivotally actuated, said broaching blade having a rearwardly facing cutting edge thereon adjacent the forward end thereof adapted to be reciprocated in said slot through the bore of a pulley supported on said shaft to cut a key slot therein when the handle is pivotally actuated, a nut threaded on the forward end of said shaft and a bushing on said shaft interposed between said nut and said boss, said bushing being adapted to bear against the front face of a pulley on said shaft to clamp the pulley against the front face of said boss when the nut is tightened, said bushing having a recess therein for accommodating the forward end of said broaching blade when the handle is actuated to shift the blade forwardly in said slot to a position wherein said cutting edge is disposed forwardly of said pulley.

4,284,378

FASTENER FOR PANELS

Akira Mizusawa, Fujisawa, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 13, 1979, Ser. No. 57,534
Claims priority, application Japan, Jul. 18, 1978, 53/86784
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—21 **4 Claims**



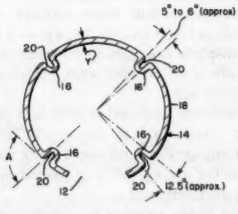
1. A fastener for panels, which fastener comprises a basal body provided with a flange portion having a circular perforation bored in the central portion thereof for permitting insertion therethrough of a screw and with a pair of legs extended downwardly from the lower surface of the flange portion so as to be opposed to each other across the line drawn perpendicularly through the center of said circular perforation, and a screw receiving body disposed between said opposed legs, provided in the upper portion thereof with a pair of receiving pieces protruding sideways out of the openings formed between said opposed legs and further provided with a screw receiving hole in the axial portion coinciding with said perpendicular line drawn through the center of said perforation, said screw receiving body being provided with engaging protuberances one each on the lateral surfaces thereof opposite said legs and said legs being provided with oblong guide holes adapted to receive said engaging protuberances into sliding contact, whereby the work of tightening a screw inserted past the perforation of said flange portion into the screw receiving hole of said screw receiving body causes the receiving pieces of the screw receiving body to be slid in the direction of the flange portion of the basal body and enables a panel interposed between the flange portion and the receiving pieces to be held in position therebetween, said flange portion of the basal body being divided into two halves and with the two halves of the flange portion being molded integrally one each with one of said pair of legs, the ends of the legs opposite said flange portion are each connected to the screw receiving body through the medium of frangible thin-walled hinges, whereby said basal body and said screw receiving body are integrally molded.

4,284,379

EARTH STRUCTURE STABILIZER

Walter M. Chaiko, Titusville, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jul. 25, 1979, Ser. No. 60,583
Int. Cl.³ F16B *13/06*; **E21D** *21/00*
U.S. Cl. 411—61 **9 Claims**



1. An improved earth structure stabilizer, for insertion into a

bore formed in an earth structure such as a roof or side wall of a mine shaft, or tunnel, or a like subterranean opening, for frictionally stabilizing such earth structure, said stabilizer comprising an elongate element having a length taken from, and comprised by, a range of lengths of from two and a half feet to six or more feet, and having a generally annular cross-section of a given, free, and single outside diameter, and formed of material of one uniform thickness, responsive to circumferential compression to facilitate a diminution of said given diameter to another, compressed, outside diameter, whereby said stabilizer can be inserted into and received by an earth structure bore having a diameter generally approximating said another diameter, to cause said stabilizer to engage the surface of such bore and frictionally anchor therewith, to stabilize the earth structure in which such stabilizer-receiving bore is formed, wherein the improvement comprises:

stiffener means, of substantially uniform dimension and conformation, extending lengthwise of said element, and projecting radially inwardly thereof only, for stiffening said stabilizer elongatedly; wherein

said stiffener means comprises means for diminishing compression resistance of said element circumferentially thereof;

said resistance-diminishing means comprises a plurality of circumferentially and substantially uniformly spaced-apart channels formed in the outside surface of said element and extending lengthwise thereof; and

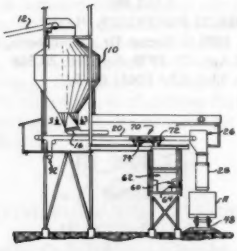
each of said channels includes side wall which are spaced apart to define an open cove or recess, in said outside surface, the radially outermost area of which occupies approximately between five and six degrees of arc, said coves or recesses defining means for permitting said stabilizer to be circumferentially compressed in order that it may fit into a smaller earth bore.

4,284,380

MULTI-CAR TRAIN LOADING STATION

Owen E. Brumbaugh, Jr., Chicago; Paul Levin, and Alston L. Reed, both of Northbrook, all of Ill., assignors to Allen & Garcia Company, Chicago, Ill.

Filed Aug. 27, 1979, Ser. No. 69,834
Int. Cl.³ B65G *67/22*
U.S. Cl. 414—21 **14 Claims**



1. Method of loading cars of a multi-car train with fluent solid material such as coal in which the cars pass beneath a loading chute without halting, comprising the steps of

measuring the weight of each car of the train as it approaches the chute;

feeding the material into the chute from a supply during the interval of time the car takes to pass beneath the chute;

weighing the material as it is fed to the chute;

interrupting said feed when the weight of the material equals the predetermined gross weight of the car less its measured weight; and

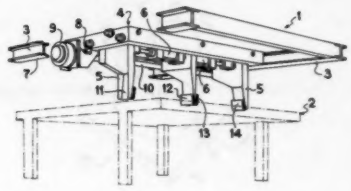
controlling the rate of feeding said material to the chute such that each car is fully and evenly filled from the chute in the interval the car is passing beneath the chute.

4,284,381

METHOD AND APPARATUS FOR STACKING BLOCKS TO FORM A PALLET HAVING PREDETERMINED SPACES THEREIN

Andre H. Minato, Fouquerolles Bresles, France, assignor to Societe d'Exploitation des Etablissements Minato S.O.D.E.E.M., Fouquerolles Bresles, France

Filed Feb. 1, 1979, Ser. No. 8,802
Claims priority, application France, Jul. 28, 1978, 78 22505
Int. Cl.³ B65G *57/26*
U.S. Cl. 414—61 **8 Claims**



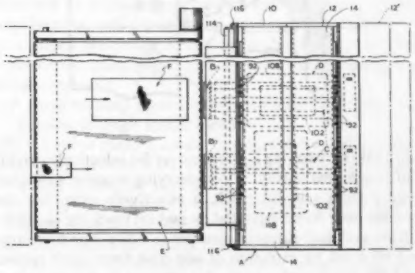
1. Apparatus for automatic packaging of products such as concrete blocks in pallets formed by stacking layers of said products comprising a fixed receiving table (**2**), a support structure on respective sides of the table (**2**), said structure being provided with guide rails (**3**) in its upper part, a moveable carriage (**4**) having a slideable translatory movement along the guide rails (**3**) and carrying gripping members (**5**) for gripping the products which are disposed successively and in respective layers on the table (**2**), and detection means cooperating with a control device for causing gripping and release by the gripping members (**5**) of the products to be packaged, in order to define reserved spaces (**18**, **19**) in a given layer of products, whereby said carriage (**4**) advances continuously though a single operating cycle forming a given number of reserved spaces (**18**, **19**) in a given layer of products.

4,284,382

OFF-LOADER

Seymour Silverman, New York, N.Y., assignor to Silverman Machines, New York, N.Y.

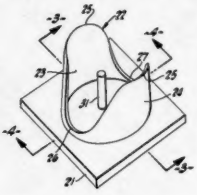
Filed May 29, 1979, Ser. No. 42,978
Int. Cl.³ B65H *29/10*
U.S. Cl. 414—76 **13 Claims**



1. Apparatus for off-loading a part from a conveyor or the like comprising: a support; part grabbing means; means for moving said grabbing means relative to said support, from a first position, wherein said grabbing means grabs the part, through a second position, defined by means for causing said grabbing means to release the part, to a third position, defined by means for causing said moving means to reverse direction; means for mounting said release causing means in a fixed position relative to said reversal causing means, said mounting

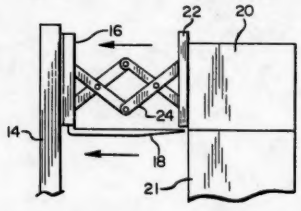
means being adjustably movably mounted on said support to permit adjustment of the distance between said first and second positions.

4,284,383
CASSETTE FILTER EJECTOR
William J. Popendorf, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Jan. 24, 1980, Ser. No. 114,755
Int. Cl.³ B01D *35/00*
U.S. Cl. 414—417 **5 Claims**



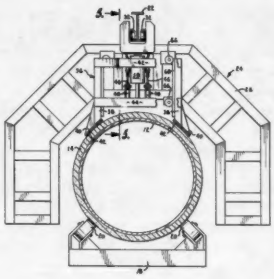
1. A cassette filter ejector for a cassette having a central aperture and having a rim and adapted to carry a filter disc within said rim and overlying said aperture comprising a base, a central post upstanding from said base to a predetermined height and adapted slidably to be received in said aperture, and a guide wall upstanding from said base concentric with said post and adapted slidably to receive said cassette, said wall including a guide portion higher than said height and another portion lower than said height for receiving a user's finger against a cassette on said post.

4,284,384
APPARATUS FOR AUTOMATICALLY DEPOSITING A LOAD IN A PREDETERMINED POSITION
John E. Olson, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.
Filed Mar. 3, 1980, Ser. No. 126,440
Int. Cl.³ B66F *9/22, 9/24*
U.S. Cl. 414—434 **14 Claims**



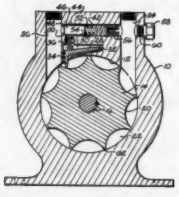
4. In a lift truck having a prime mover for selectively driving said lift truck rearwardly, a load-carrying member extending forwardly from said lift truck, a selectively extensible and retractable push frame mounted on said lift truck for pushing a load from said load-carrying member in a direction forwardly of said lift truck by extension of said push frame with respect to said lift truck and selectively actuated hydraulic power means connected to said push frame for extending said push frame in response to the supply of hydraulic fluid under pressure thereto through a conduit, the improvement which comprises hydraulic synchronizing means responsive to the pressure of said hydraulic fluid supplied to said hydraulic power means and connected to said prime mover for actuating said prime mover to drive said lift truck rearwardly in response to actuation of said hydraulic power means to extend said push frame.

4,284,385
METHOD AND EQUIPMENT FOR HANDLING PIPE MOUNTED CARRIAGE
Steven A. Lively, Dewey, and Stephen K. Madden, Bartlesville, both of Okla., assignors to H. C. Price Co., Bartlesville, Okla.
Filed Aug. 15, 1979, Ser. No. 66,516
Int. Cl.³ B23Q *5/22*
U.S. Cl. 414—747 **6 Claims**



1. Apparatus for supporting a carriage in working relationship to a work surface, said apparatus being coupled with an overhead support and comprising:
an extendable support leg movable relative to said carriage over a rectilinear path between extended and retracted positions;
cable means coupling said leg and said carriage with said overhead support;
means for moving said leg between extended and retracted positions, said moving means being coupled with said leg and with said carriage, the cable being of sufficient length relative to the distance between said extended and retracted positions of the leg, whereby the cable is slack and the entire weight of the carriage is supported by the leg on the work surface when the leg is in its extended position and the cable is taut and the leg is clear of said surface when the leg is in its retracted position.

4,284,386
HIGH PRESSURE PUMP
James L. Hudson, 2601 S. Forest Dr., Melbourne, Fla. 32901
Filed Apr. 27, 1979, Ser. No. 33,566
Int. Cl.³ F04D *29/54*
U.S. Cl. 415—209 **5 Claims**



1. A pump comprising:
a casing having a cylindrical cavity provided therein;
a cylindrical rotor carried in said cylindrical cavity;
an inlet port extending through said casing into said cavity positioned on one side of a longitudinal axis of said rotor;
an outlet port extending through said casing into said cavity positioned on an opposite side of said longitudinal axis of said rotor;
means for rotating said rotor;
a plurality of circumferentially spaced concave curving

walls provided on the periphery of said cylindrical rotor defining circumferentially spaced chambers;

a source of fluid being supplied through said inlet port into said chambers of said rotor as said rotor is rotated;

a pivotal member carried between said inlet port and said outlet port; and

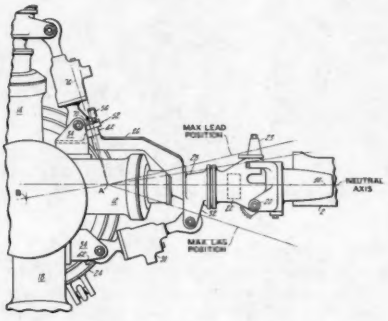
an inwardly extending arm means carried by said pivotal member riding on said curving walls of said chambers as said chambers are rotated past said outlet port directing said fluid from said chambers out said outlet port.

4,284,387

BLADE FOLD RESTRAINT SYSTEM

Donald L. Ferris, Newtown, Conn., assignor to United Technologies Corp., Hartford, Conn.

Filed May 2, 1979, Ser. No. 35,364
Int. Cl.[3] B64C *11/28, 27/38, 27/50*
U.S. Cl. 416—134 A **7 Claims**



1. In a helicopter rotor wherein each blade is independently supported from a hub arm for full articulated flight motions by an elastomeric bearing establishing blade pitch, flapping, and lead/lag axes all intersecting at the focal point of the bearing, and having flight control linkage including a blade mounted pitch control horn, and further having a blade fold system including a substantially vertical blade fold hinge for each blade, located outboard of and independently of the elastomeric bearing; an improved three axis blade restraint mechanism for said fold system characterized by a lock assembly mounted on the hub arm and including a retractable pin adapted to engage the radial extremity of the pitch control horn, wherein the pin axis is offset from the blade pitch, flapping, and lead/lag axes and also intersects the focal point of the elastomeric bearing.

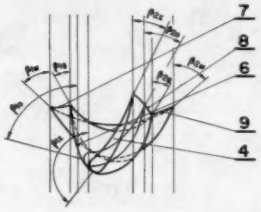
4,284,388

MOVING BLADE FOR THERMIC AXIAL TURBOMACHINES

Robert Szewalski, Gdansk-Wrzeszcz, Poland, assignor to Polska Akademia Nauk, Instytut Maszyn Przeplywowych, Gdansk, Poland

Continuation of Ser. No. 738,175, Nov. 2, 1976. This application Feb. 1, 1979, Ser. No. 8,397
Claims priority, application Poland, Nov. 3, 1975, 184450
Int. Cl.[3] F01D *5/14*
U.S. Cl. 416—223 A **1 Claim**

1. An axial flow turbomachine rotor blade twisted from root to the tip in order to match fluid angles at entry and exit at different radii, according to a predetermined vortex flow pattern, said blade being tapered simultaneously in order to continuously reduce the cross-section from root to the tip, wherein: entry flow angles first diminish continuously from a large value at blade tip down to a minimum value at a predetermined radius of division of the whole blade length into two portions of different vortex-flow patterns, and then said angles increase again down to the root section, and having the exit



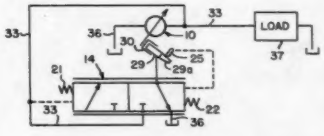
angle changing continuously from tip to the root in one direction.

4,284,389

INPUT TORQUE CONTROL SYSTEM FOR A VARIABLE DISPLACEMENT PUMP

John E. G. Young, Watertown, and Donald R. Schneckenburger, Chaumont, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 24, 1979, Ser. No. 69,478
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—218 **4 Claims**



1. An input torque control system for a variable displacement pump including a displacement control cam operably connected to displacement control cylinder means within a pump housing, and pressure and flow sensitive compensating valve means connected to the pump housing for regulating output of the pump, wherein improved compensating valve means comprises:

(a) valve housing means secured to a surface of the pump housing through spacer means;

(b) the valve housing means having a valve sleeve operable axially in a bore of the housing and a spool valve operable axially within the sleeve;

(c) spring biasing means for axially biasing the sleeve and the spool valve in opposite directions;

(d) lever means for axially operating the sleeve disposed in part in the valve housing means and in part in the spacer means having a central pivot from which

(1) a first arm extends to engage the sleeve,

(2) a second arm extends to engage feedback means positioned by said displacement control cam, and

(3) a third arm extends to at times contact an adjustable stop means for limiting output pressure of the pump; and

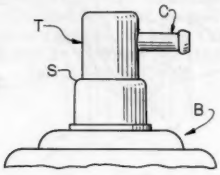
(e) means including the spool valve for selectively delivering output of the pump to the control cylinder means or output of the control cylinder means to a tank in accordance with pump output pressure sensed by the spool valve.

4,284,390

COLLAR

Walter E. Basch, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,263
Int. Cl.³ F04B *39/12, 39/60*
U.S. Cl. 417—313 **3 Claims**



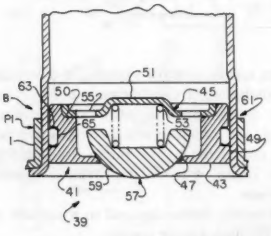
1. In a fuel pump for use in an automotive fuel system, the fuel pump including a body having a fuel intake cavity and a fuel discharge cavity, one of the respective cavities being defined by a tower formed in the body and the tower having a fuel conduit formed integrally with the tower at the outer end thereof, the conduit projecting outwardly from the tower and the tower being subject to tearing when the conduit is subjected to abnormal forces such as occur during a crash, the improvement comprising a metal collar sized to fit over the tower at its outer end, the collar having an opening therein sized to accommodate the conduit whereby the collar is fitted about the conduit and the collar being attachable to the tower to reinforce the tower whereby the tower does not tear when the conduit is subjected to abnormal forces.

4,284,391

CRASHWORTHY FUEL PUMP IMPROVEMENT

Raymond E. Williamson, Granite City, Ill., assignor to ACF Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,264
Int. Cl.³ F04B *39/10*
U.S. Cl. 417—569 **2 Claims**



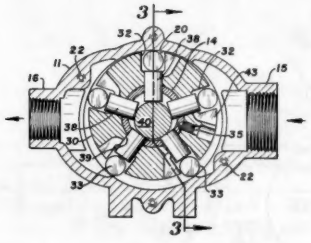
1. In a fuel pump for use in an automotive fuel system, the fuel pump including a body having a first portion in which is formed a fuel intake cavity and a fuel discharge cavity and a second portion in which is formed a fuel pumping chamber, one end of each cavity being in fluid communication with the pumping chamber, a flexible diaphragm closing the pumping chamber, the diaphragm being insertable into the open end of the second portion of the body, means for flexing the diaphragm to pump fuel into and out of the pumping chamber through the respective intake and discharge cavities and a housing in which the flexing means is housed, the housing having one end formed for abutment with the open end portion of the body, the improvement comprising a control valve having a valve seat pressed into the portion of the body forming the fuel discharge cavity, the valve seat having a central, circular opening with a curved peripheral surface, means for sealing the valve seat and the body, a valve member movable relative to the opening, the valve member being spherical in form with the outer curved contact surface of the valve member seatingly contacting the curved peripheral surface of the opening, a spring acting against the valve member to urge the valve member in a valve closing direction, and a seat for the spring.

4,284,392

ROLLER PUMP WITH RADIAL MEMBERS

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Jan. 3, 1977, Ser. No. 756,051
Int. Cl.³ F04C *2/00*
U.S. Cl. 418—225 **4 Claims**



1. A roller pump comprising:

(a) a housing having longitudinally spaced end walls and an intermediate circumferential wall forming a generally cylindrical pumping chamber;

(b) a rotor rotatably mounted within said pumping chamber with its axis offset from that of the cylindrical pumping chamber;

(c) said rotor having a plurality of roller receiving slots formed into and across the circumferential surface thereof and uniformly angularly spaced therearound, a central concentric bore extending inwardly from a first lateral surface thereof, and a plurality of radially extending bores beginning at said central concentric bore and terminating at the bottom of said roller receiving slots;

(d) a cylindrical cam shaft secured to one of said end walls and extending into said central concentric bore in said rotor;

(e) a cylindrical roller disposed in each roller receiving slot and having a length corresponding to the length of said roller receiving slot;

(f) a push rod disposed in each of said radially extending bores and having a length such that the sum of the radius of said cam shaft, the length of said push rod and the diameter of said cylindrical roller is substantially equal to the radius of said generally cylindrical pumping chamber, said push rods engaging said cylindrical rollers along a line of contact; and

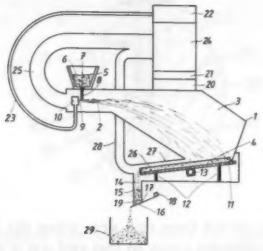
(g) fluid inlet and outlet ports formed in said housing and communicating with said cylindrical pumping chamber and effectively separated from one another at a point determined by the offset between said rotor and said cylindrical pumping chamber, the arrangement being such that as the rotor is turned, the axes of said cylindrical rollers are held parallel to the axis of said cylindrical pumping chamber, the surface of said cylindrical rollers being held in positive engagement with the walls of said cylindrical pumping chamber such that viscous fluids may be handled by said pump.

4,284,393

POWDER MANUFACTURING APPARATUS

Gunnar Brunosson; Hans-Gunnar Larsson, and Erik Westman, all of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed May 19, 1980, Ser. No. 150,931
Claims priority, application Sweden, May 31, 1979, 7904750
Int. Cl.[3] B22F 9/00
U.S. Cl. 425—7 7 Claims



1. Apparatus for manufacturing powder by a melt atomization process, said apparatus comprising

a container,

means for forming a stream of the melt in said container,

means for directing a jet of gas transversely into the melt stream in order to atomize the melt stream into droplets which solidify in said container to form powder which falls onto a powder-receiving and transporting means in a lower part of said container for transporting the powder to an outlet for powder from the container,

means for withdrawing gas from said container,

means for cooling at least a part of the withdrawn gas,

means for re-introducing at least part of the cooled gas into said lower part of the container, and

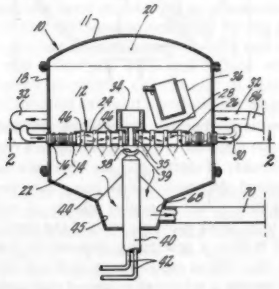
guide means for forcing said re-introduced gas to flow in contact with the powder on said powder-receiving and transporting means in a direction substantially opposite to the direction of flow of the powder as it is transported to said outlet by said powder-receiving and transporting means.

4,284,394

GAS MANIFOLD FOR PARTICLE QUENCHING

Charles C. Thompson, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 19, 1980, Ser. No. 188,447
Int. Cl.[3] B22F 9/00
U.S. Cl. 425—8 9 Claims



1. Apparatus for producing metal powder comprising:

a housing;

disk means within said housing mounted for rotation about an axis;

nozzle plate means disposed within said housing;

means defining a cooling fluid manifold volume on one side of said plate means;

means defining a quenching chamber on the other side of said plate means;

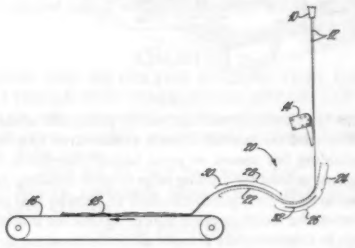
a plurality of cylindrical vortex tubes each having wall means defining an inner cylindrical wall surface, at least a first portion of each of said tubes being disposed within said manifold, each of said tubes including means for admitting cooling fluid from said manifold volume into said tube and for creating a vortex flow of said fluid within said tube, each of said tubes having cooling fluid outlet means opening into said quenching chamber, said tubes being constructed, sized, and arranged to create a desired pattern of cooling fluid flow from said outlets into said quenching chamber around said disk means.

4,284,395

APPARATUS FOR FORMING FILAMENTS

John L. Kane, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 12, 1979, Ser. No. 99,060
Int. Cl.[3] B29D 7/02
U.S. Cl. 425—66 9 Claims



1. Apparatus for forming filaments comprising:

means for supplying a plurality of streams of molten material;

attenuation means for supplying a moving fluid to attenuate said streams into said filaments, said filaments being entrained in said fluid moving from said attenuation means; and

means for separating a portion of said entraining fluid from said filaments comprising a foraminous surface having;

(a) an intercept region oriented to form an acute angle between a path defined by the entrained filaments approaching said foraminous surface and said intercept region; and

(b) a concave region contiguous with said intercept region oriented such that at least a portion of said concave region is positioned substantially transverse to said path such that a portion of said fluid passes through said foraminous surface and a portion of said fluid moves along said foraminous surface to move said filaments along said surface.

4,284,396

APPARATUS FOR VACUUM THERMOFORMING POLYMERIC SHEET MATERIAL

Christopher P. Thissen; Jerry J. Ferwerda; Milford J. Tweet, and Ronald D. Hatfield, all of Austin, Minn., assignors to Walker Process Corporation, Aurora, Ill.

Filed Jul. 14, 1980, Ser. No. 168,731
Int. Cl.[3] B29C 17/04
U.S. Cl. 425—342.1 10 Claims

1. Apparatus for continuously vacuum molding a plurality of three dimensional geometrical shapes in a roll of thermoplastic polymeric sheet material comprising:

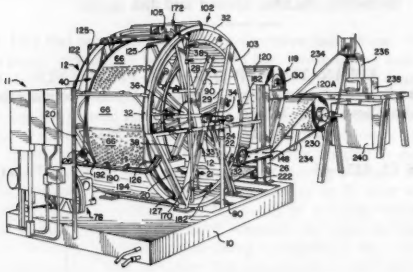
a cylindrical shell rotatably mounted on an axle and means to rotate the cylindrical shell;

said cylindrical shell including a plurality of single curved molding plates, the outer molding faces of which have a plurality of three dimensional geometrical shapes;

at least one air flow orifice extending through each molding plate so that air can be removed from the molding face of each molding plate;

means to continuously feed a length of polymeric sheet material into position adjoining the outer molding faces of the cylindrical shell while it rotates;

means to continuously heat moving polymeric sheet material to a thermoforming condition as the cylindrical shell rotates to thereby provide a heated sheet portion adjoining each consecutive molding plate;



means to releasably seal the heated polymeric sheet to and all around the border of each consecutive molding plate including bar means to press heated polymeric material against at least the trailing edge of each molding plate in a line axial to the cylindrical shell to thereby seal that portion of the molding plate border against air intake;

means to consecutively remove air, from between the heated polymeric sheet and the molding faces of consecutive molding plates, through the at least one air flow orifice whereby atmospheric pressure can force the heated sheet into the shape of the molding face surface; and

means for continuously removing the molded sheet, after it cools to a non-plastic condition, from contact with the moving molding plate molding face.

4,284,397

DEVICE FOR DRAWING THERMOPLASTIC PREFORMS DURING THE BLOW MOLDING THEREOF

Edmond Michel, Brussels, Belgium, assignor to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

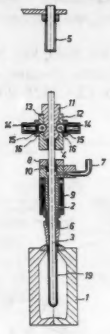
Filed Aug. 23, 1979, Ser. No. 68,955

Claims priority, application France, Aug. 24, 1978, 78 24756

Int. Cl.³ B29C *17/02, 17/07*

U.S. Cl. 425—392 **6 Claims**

1. Device for the longitudinal drawing of thermoplastic preforms each possessing a closed base and an open neck comprising: means for holding a preform by its open neck; a rod provided with slots and mounted to be actuated mechanically for longitudinal drawing positioned with respect to said holding means so that when said rod is driven, said rod extends through the open neck and exerts an axial thrust on the base of the preform; a driving sleeve which actuates said rod and in which said rod can slide; mechanical means connected to said driving sleeve for driving said driving sleeve; retractable wedges which are housed in said slots and which normally secure said sleeve relative to said rod; and means which permit



said wedges to retract from said slots when the axial thrust exceeds a predetemined value, so that said rod is not driven.

4,284,398

APPARATUS FOR THE MANUFACTURE OF A FOAM MATERIAL BALL WITH AN EMBOSSED SURFACE

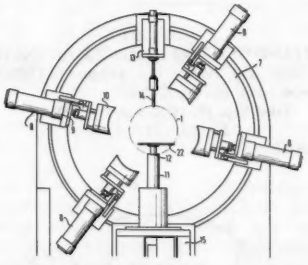
Horst Bokelmann, Bad Wildungen, Fed. Rep. of Germany, assignor to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,791

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904026

Int. Cl.³ B29D *27/00;* **B29C** *3/00*

U.S. Cl. 425—394 **6 Claims**



1. Apparatus for burning depressions into the surface of a spherical foam material body, comprising in a ring-shaped tool holder, a plurality of electrically heatable burn-in tools having suitably formed depressions and being disposed about said ring-shaped tool holder at angles relative to each other, said embossing tools being movable toward the center of said ring-shaped tool holder, a nest being disposed in said ring-shaped tool holder, movable in radial direction of said ring-shaped tool holder and having a spherically-cupped end surface, and a pin being disposed diametrically opposite said nest for fixing the spherical foam material body in a work position, said nest being rotatable about its longitudinal axis.

4,284,399

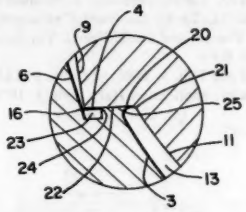
CONTACT LENS MOLD

Paul D. Newcomb, Franklin; Paul A. Davignon, Uxbridge, and Harold M. Miller, Whitinsville, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jun. 23, 1980, Ser. No. 161,832

Int. Cl.³ B29C *5/00*; B29D *11/00*

U.S. Cl. 425—410 **2 Claims**



1. A disposable contact lens mold for casting a finished, water swellable, soft contact lens, the lens having a chosen diameter, a posterior surface, a finished edge and an anterior surface which comprises,

a hollow, frustroconical male member having a convex molding surface at the narrow end, said convex molding surface having a first chosen radius for shaping the posterior surface, a first longitudinal axis extending through said member, a solid, continuous, ring-shaped, rigid mold mating portion extending from the narrow end of said male member radially inwardly toward said convex molding surface, said mating portion having first and second edges defining a first mating surface, and a first concave junction surface extending from said convex molding surface to said first mating surface at a line of tangentcy, said first junction surface having a second chosen radius for shaping a portion of the finished edge,

a hollow, inverted frustroconical female member having a cavity at the narrow end for receiving said male member, said cavity having a centrally located concave molding surface, said concave molding surface having a third chosen radius for shaping the anterior surface of said lens, a second longitudinal axis extending through said female member, a second concave junction surface extending from the periphery of said concave molding surface, said second concave junction surface having a fourth chosen radius, a second mating surface extending radially outwardly from a tangent to said second junction surface, said second mating surface having an inner edge and an outer edge, an annular groove in said female mold member connected to said outer edge, and an outwardly tapering wall extending from said annular groove to the narrow end of said female member, said first edge of said male member and said inner edge of said female member having an identical diameter, said second edge having a diameter chosen to provide an interference fit with said outwardly tapering wall when said male and female member are united thereby providing coincidence of said first and second longitudinal axes and a parting line tangent to said finished edge of the lens.

4,284,400

POSITIVE EXTRACTOR FOR CUP MOLDING MACHINE

Peter D. Kaspar, and Carroll D. Satterfield, both of Dover, Del., assignors to International Playtex, Inc., Stamford, Conn.

Filed Jul. 18, 1980, Ser. No. 170,274

Int. Cl.³ B29C *17/00*, *7/00*

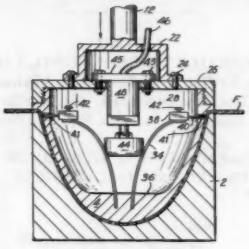
U.S. Cl. 425—444 **16 Claims**

1. An extractor mechanism for disengaging a molded fabric article from a mold member comprising:

(a) an extractor body member adapted to be moved into mating relationship with a mold member after a fabric molding operation;

(b) pin means positioned in said extractor body member to move through openings extending through the outer perimeter of the extractor body member.

(c) means for causing said pin means to move through said openings into engagement with the molded article;



(d) means to move said body extractor member away from said mold member with molded article engaged by said pin means; and

(e) means for retracting said pin means from engagement with the molded article after the extractor mechanism has been moved out of mating relationship with said mold.

4,284,401

METHOD AND MEANS FOR FEEDING FUEL INTO FLUIDIZED-BED COMBUSTION APPARATUS

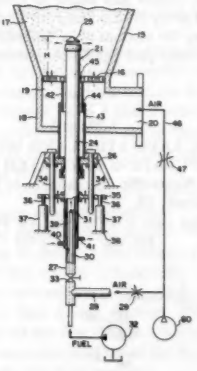
June Tatebayashi, Toyonaka, and Kazuaki Yano, Amagasaki, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jul. 31, 1979, Ser. No. 62,532

Claims priority, application Japan, Aug. 3, 1978, 53-95087; Apr. 26, 1979, 54-51831

Int. Cl.³ F23D *19/02*

U.S. Cl. 431—7 **6 Claims**



2. A fluidized-bed combustion apparatus comprising an enclosure having an air distributor, a bed of solid particles overlying the distributor, means for feeding fluidizing air into the bed through the distributor to fluidize the bed, means for controlling the feed rate of the fluidizing air, means including a burner for feeding a mixture of a fuel and fuel-carrying air into the bed, and means for controlling the feed rate of the fuel-carrying air, said burner comprising a hollow stem extending upwardly through the distributor for the transfer of the fuel-air mixture and having one end located in the bed, and a head on said one end of the stem for introducing the fuel-air mixture into the bed, the improvement comprising the head of

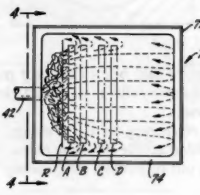
the burner including a hollow base placed in communication with the burner stem, a top cover, and a plurality of baffle plates of generally annular arrangement extending between the base and the top cover to define lateral outlet openings for ejection of the fuel-air mixture, each baffle plate being oriented at a specific angle relative to the radial direction of the burner head, whereby the fuel-air mixture is introduced into the bed in the form of swirling jets.

4,284,402

FLAME MODIFIER TO REDUCE NO_x EMISSIONS

Jesse E. Sheets, Griffith, Ind.; Bernard C. Vitchus, Palos Hills, Ill.; Tai S. Chao, Homewood, Ill., and Martin F. Zygowicz, Lansing, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed May 2, 1979, Ser. No. 35,200
Int. Cl.³ F23M 3/12; F23C 9/02
U.S. Cl. 431—9 **10 Claims**



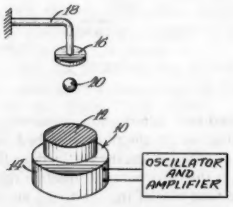
1. A method for reducing NO_x emissions in a turbulent flame having a temperature in the range of about 1700° F. to about 3500° F., said method comprising causing at least a portion of said flame; down stream of a smoke plane, wherein said smoke plane is defined by a location which the leading edge of an array of vanes which are stable both chemically and physically to high temperature and oxidizing environment of said flame and which have a thicknesses in the range of about 1/16 of an inch to about ½ of an inch, widths in the range of about ¼ of an inch to about 3 inches, and the spaces therebetween in the range of about 3/16 of an inch to about 4 inches would have when the flame would just begin to become smoky due to insertion of said array in said flame, to flow in a non-turbulent pattern; whereby the amount of turbulence in the flow pattern of substantially only post ignition combustion products is reduced.

4,284,403

ACOUSTIC LEVITATION AND METHODS FOR MANIPULATING LEVITATED OBJECTS

Charles A. Rey, Naperville, Ill., assignor to Intersonics Incorporated, Northbrook, Ill.

Filed Oct. 6, 1978, Ser. No. 949,070
Int. Cl.³ F24J 3/00
U.S. Cl. 432—1 **14 Claims**



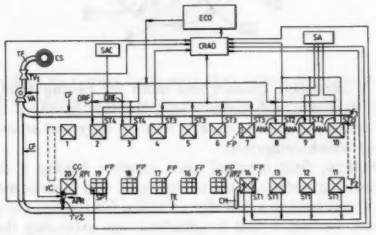
1. An acoustic levitation system comprising source means for producing a field of sound having a wavelength, and reflector means spaced from said source means for producing localized reflection of a portion of sound, said reflector means having an effective reflecting surface of a size less than four wavelengths of the sound such that said system is substantially free of resonance and such that a localized energy well is created adjacent said reflector means capable of levitating an object.

4,284,404

CONTINUOUS RING BAKING FURNACES OF THE HOFFMANN TYPE

Jean L. Genevois, Corso Sempione, 3, Milano; Roberto Falohi, Via Abruzzi 11, Terni; Giovanni Costantini, Viale Treviri, 147, Ascoli Piceno, and Paolo Presti, Via della Balduina 133, Roma, all of Italy

Filed Feb. 5, 1980, Ser. No. 118,683
Claims priority, application Italy, Feb. 5, 1979, 47898 A/79
Int. Cl.³ F27B 9/40
U.S. Cl. 432—37 **7 Claims**



1. In combination with a continuous ring furnace for baking and rebaking of carbon bodies, said furnace comprising a plurality of chambers arranged in a continuous ring, each chamber including a capacity for receiving bodies to be heated and a separate fire-pit adjacent said capacity, the furnace comprising further a flue duct operatively connected to each chamber and provided with a suction fan and an outlet stack connected to the flue duct,

the operation of the furnace as a whole being characterized by the simultaneous operation of phased adjacent pairs of chambers wherein

(a) at least one pair of chambers is in pre-heat phase,

(b) at least one pair of chambers is in distillation phase,

(c) at least one pair of chambers is in preparation,

(d) at least one pair of chambers is provided with fuel burners,

(e) at least one pair of chambers is in cooling phase, and

(f) at least one pair of chambers is uncovered and provided with equipment for recycling of fumes by means of a pressure fan,

the improvement which includes a coordinated computerized data collection and processing system for measurement, control, and regulation of the temperature and the gas flow in groups of chambers and single chambers in a group, which system comprises

a thermal sensor in each chamber of groups (a), (b), (c), and (d);

a first pressure sensor in the last chamber of group (a) which is connected to said flue duct;

another pressure sensor in the first chamber of group (f) adjacent to the last chamber of group (e), which chamber is also provided with said recycling equipment;

a first means placed in the flue duct between said suction fan and the stack for measuring the gas flow;

a second means for measuring the gas flow placed in the recycling equipment;

a first means for regulating the speed of an electric motor operatively connected to the suction fan motor;

a second means for regulating the speed of an electric motor operatively connected to the motor of the recycling pressure fan;

means in each chamber of group (b) for lowering the temperature; and

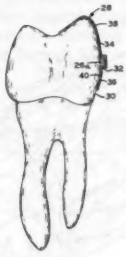
valves adapted to regulate the flow of fuel to the burners.

4,284,405

ORTHODONTIC APPLIANCE METHOD OF TREATMENT AND MANUFACTURE

Eugene L. Dellinger, 1326 Old Lantern Trail, Fort Wayne, Ind. 46825

Filed Nov. 30, 1979, Ser. No. 98,908
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—24 **34 Claims**



1. The method of fabricating an orthodontic appliance for use in repositioning one or more teeth in a patient's mouth, comprising the steps of:

(a) forming a model of the patient's teeth in the shape of a dental arch with the replicas of the teeth in idealized locations,

(b) establishing on the labial or buccal surfaces of selected ones of said replicas locations for the mounting of brackets,

(c) providing on each selected surface at the established location an orienting embossment,

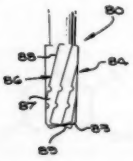
(d) and forming onto the incisal edge and surface, including such embossment, in intimate conforming engagement, of each selected replica a plate-like fixture which has an exterior provided with a locating boss corresponding to the shape of said embossment and a mounting surface surrounding said boss which corresponds to the replica surface.

4,284,406

DENTAL TOOTH BUR

Thomas E. Hughes, 6024 Fallbrook, Suite 103, Woodland Hills, Calif. 91367

Filed Aug. 19, 1980, Ser. No. 179,298
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—165 **27 Claims**



1. A dental tooth bur for preparing a tooth cavity for filling comprising:

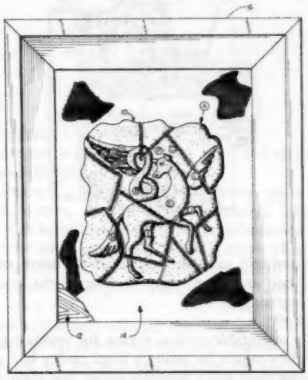
cutting means for producing a wall for said tooth cavity having a nonridged surface a first region and having a continuously crossridged surface in a second region vertically beneath said first region, whereby said nonridged surface provides maximum shear strength for said wall and said crossridged surface assists in the retaining of the material with which said cavity is filled.

4,284,407

RELIEF SCULPTURE GUIDANCE METHOD

Ben H. Hofstetter, 1917 Texas, Norman, Okla. 73071

Filed Mar. 9, 1979, Ser. No. 19,319
Int. Cl.³ G09B *19/10*
U.S. Cl. 434—82 **12 Claims**



1. A method for producing a relief sculpture artwork from clay material, the method comprising the steps of:

(a) disposing the clay material, in an amount sufficient to form a first design blank, on a working surface between two substantially parallel first and second elevating tracks, each of the elevating tracks having a height equal to the desired thickness of the first design blank;

(b) locating a rigid cylindrical member, having a first end and a second end, so that the first end rests on the first elevating track and so that the second end rests on the second elevating track;

(c) rolling the cylindrical member along the length of the elevating tracks so that the clay material disposed between the elevating tracks is molded into the first design blank having a flat display surface and a substantially parallel flat mounting surface, the first design blank being molded to a height above the working surface equal to the height of the elevating tracks;

(d) contacting the display surface of the first design blank with a first design element template;

(e) removing clay material from around the borders of the design template to define a first design element having a flat, planer display surface substantially concurrent with the first design element template outline;

(f) removing the first design element template from the display surface of the first design element;

(g) securing the mounting surface of the first design element to a substantially flat base member;

(h) forming a second design element by repeating steps (a) through (f), using a second design element template, the second design element having a flat display surface and a substantially parallel flat mounting surface, the second design element an altered height from the first design element which is accomplished by altering the height of the elevating tracks used to form the first design element so that the second design element has a different thickness than the first design element; and

(i) securing the mounting surface of the second design element to the substantially flat base member.

4,284,408

AUTOMATIC VARIABLE POWER TRANSMISSION

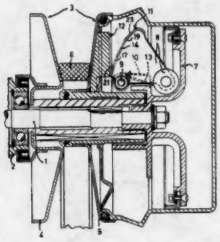
Edo Boer, Eersel, and Sybrand W. Vogt, Mierlo, both of Netherlands, assignors to Volvo Car B.V., Mc Helmond, Netherlands

Filed Sep. 10, 1979, Ser. No. 73,674

Claims priority, application Netherlands, Sep. 8, 1978, 7809168

Int. Cl.[3] F16H *11/06*

U.S. Cl. 474—14 2 Claims



1. An automatic variable power transmission of the type having a V-belt and adapted for driving a vehicle, said transmission comprising:

a drive shaft;

an axially adjustable pulley means for receiving a V-belt, said pulley means including a fixed pulley half secured to said drive shaft and a movable pulley half slidably secured to said drive shaft for movement towards and away from said fixed pulley half to thereby vary the gear ratio of the transmission; and

automatic adjustment means operatively engaging said movable pulley half for shifting said movable pulley half towards said fixed half as the angular velocity of the drive shaft increases and for maintaining the gear ratio of the transmission relatively constant within a predetermined range of drive shaft angular velocities, said adjustment means comprising:

at least one centrifugal weight member; and

means for pivotally securing said weight member to said shaft for radial displacement upon rotation of said drive shaft, said weight member defining a cam surface in contact with a straight cam follower surface carried by said movable pulley half, said cam surface including an elongated, generally straight portion whereby when said straight portion engages said cam follower surface at a first angular velocity, the weight member will not pivot and the gear ratio will remain essentially constant until a second higher angular velocity of said drive shaft is reached.

4,284,409

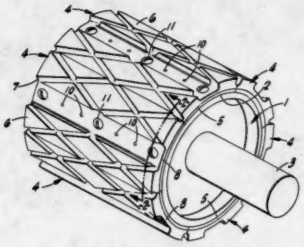
REPLACEABLE PULLEY LAGGING

David A. Van Teslaar, Stockton, Calif., assignor to Randtron, Menlo Park, Calif.

Filed Aug. 27, 1979, Ser. No. 69,804

Int. Cl.[3] F16H *55/38*

U.S. Cl. 474—185 3 Claims



1. In replaceable pulley lagging which includes a multiplicity of elongated traction pads extending, in circumferential array, across and detachably secured to the face of a pulley; the improvement characterized by each traction pad comprising a back plate, an elastomeric pad vulcanized on the back plate, the elastomeric pad being of materially reduced thickness intermediate its sides to form a lengthwise groove of substantial depth, there being spaced holes in the portion of the back plate beneath the groove, and fasteners passing from the groove through the holes in the back plate and detachably securing the same to the face of the pulley; each traction pad being preformed to mate with the arcuate pulley face, and the lengthwise groove is disposed centrally of the sides of the elastomeric pad, is continuous, and extends from end to end of said pad; there being a membrane, integral with the elastomeric pad, and which membrane bottoms the groove and is vulcanized to said portion of the back plate.

4,284,410

PROCESS FOR THE PRETREATMENT OF CELLULOSE FIBERS TO BE PRINTED ACCORDING TO THE THERMOTRANSFER PRINTING METHOD

Ehrenfried Nischwitz, Schmitten, and Walter Dürsch, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 18, 1979, Ser. No. 76,591

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841239

Int. Cl.³ D06P *1/16*

U.S. Cl. 8—471 **2 Claims**

1. A process for the pretreatment of textile material consisting entirely or partially of cellulose fibers and which is to be printed with disperse dyes according to the thermotransfer process, which comprises impregnating the textile material with a solution or dispersion containing

(a) a compound of the formula I

$$NH_2—CO—Y—R \quad (I)$$

wherein R stands for a group of the formulae R_a, R_b or R_c

$$—CH_2—CH=CH_2 \quad (R_a)$$

$$—(CH_2—CH_2—O)_m—R_1 \quad (R_b)$$

or

$$—CHR_3—CH_2—O—\left[\begin{matrix}O\\ \|\\ P—X—CHR_3—CHR_3—O\\ |\\ R_2\end{matrix}\right]_n—H \quad (R_c)$$

in said formulae R_1 is hydrogen or C_{1-4}alkyl, R_2 is C_{1-4}alkyl, R_3 is hydrogen or methyl, n is an integer of from 1 to 6, m is an integer of from 1 to 10, X is CH_2 or O and Y, in case that R stands for R_a or R_b is an oxygen atom and in case that R stands for R_c is an oxygen atom or an imino group (NH),

(b) a glyoxal or malamine formaldehyde resin and

(c) an acid catalyst for the condensation of these resins, and subsequently drying the textile material and subjecting it to the action of heat.

4,284,411

ANTHRAQUINONE DERIVATIVES FOR PIGMENTING ORGANIC MACROMOLECULAR SUBSTANCES

Rütger Neeff; Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,004

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835067

Int. Cl.³ D06P *3/52*; C09B *1/16*

U.S. Cl. 8—506 **11 Claims**

1. Anthraquinone derivatives which in one of their tautomeric structures correspond to the formula

$$A\left[—N=HC—\underset{HO}{\overset{R_1}{C}}=\underset{N}{\overset{R_2}{C}}—\underset{OH}{C}=\right]_m \quad (I)$$

in which

A denotes an anthraquinone radical which is free from sulphonic acid groups, is optionally further substituted and preferably consists of at most 5 fused rings,

m is a number from 1–4,

R_1 is hydrogen or C_1–C_4-alkyl group and

R_2 is a cyano group or a radical of the formula

$$—COOR_3 \quad (II)$$

or

$$—COO—\text{(phenyl)}—(R_4)_p \quad (III)$$

or a radical of the formula

$$\text{(benzimidazole)}—(R_4)_n \quad (IV)$$

in which formulae

R_3 is hydrogen, a straight-chain or branched alkyl group or a cycloalkyl radical,

R_4 is halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, unsubstituted carbamoyl, unsubstituted sulfamoyl, substituted carbamoyl or substituted sulfamoyl where the substituents are C_1 to C_4 alkyl, phenyl, benzyl which in turn can be optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, fluorine, chlorine, bromine, or nitro or

R_4 can be acylamino wherein the acyl group is (C_1 to C_4-alkyl)-carbonyl or benzoyl which in turn can be optionally substituted in the benzene nucleus by C_1 to C_4 alkyl, chloro, C_1 to C_4 alkoxy or nitro or

R_4 can be arylamino which in turn can be optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy fluorine, chlorine, bromine or nitro,

n is 0, 1, 2, 3 or 4 and

p is 0, 1, 2, 3, 4 or 5.

4,284,412

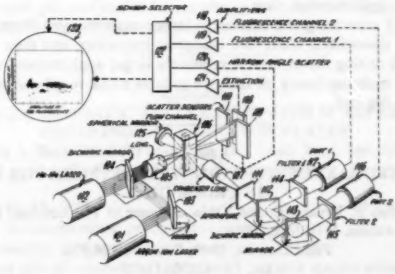
METHOD AND APPARATUS FOR AUTOMATED IDENTIFICATION AND ENUMERATION OF SPECIFIED BLOOD CELL SUBCLASSES

W. Peter Hansen, Middleboro, and Robert A. Hoffman, Mansfield, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Jul. 13, 1979, Ser. No. 57,482

Int. Cl.³ G01N *33/48, 21/64*

U.S. Cl. 23—230 B **14 Claims**



1. An automated method of identifying and enumerating cells of a select subclass of lymphocytes in blood comprising the steps of:

(a) providing an aliquot from the blood to be studied;

(b) selectively tagging cells of said subclass by incubating said aliquot with an antibody which is selectively reactive with distinct antigenic determinants on the surface of cells of said subclass, said antibody having a predetermined fluorescence response to a given optical stimulation;

(c) lysing red cells from said aliquot;
(d) passing said aliquot, substantially a cell at a time, through an area of focused optical stimulation of said given type, while detecting light scattered by and emitted from said cells; and
(e) differentiating cells of said subclass based at least in part on occurrence of said predetermined fluorescence response in said detected light.

4,284,413

IN-LINE METHOD FOR THE BENEFICIATION OF COAL AND THE FORMATION OF A COAL-IN-OIL COMBUSTIBLE FUEL THEREFROM

C. Edward Capes; William L. Thayer, both of Ottawa; Richard D. Coleman, Orleans, all of Canada, and Leonard Messer, Coraopolis, Pa., assignors to Canadian Patents & Development Ltd., Ottawa, Canada and Leonard Messer, Coraopolis, Pa.

Filed Dec. 26, 1979, Ser. No. 105,602
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **5 Claims**

1. An in-line method for the beneficiation of coal and the formation of a coal-in-oil combustible fuel therefrom, comprising:
(a) comminuting coal in water to produce a coal-in-water slurry comprising impurity liberated coal particles at least as fine as 40 microns weight mean particle size, then
(b) mixing the coal-in-water slurry with light oil as agglomerating liquid having a specific gravity of less than of the order of 1 g/cm^3 to micro-agglomerate the impurity liberated coal particles and primarily dissociate inorganic impurities and some water therefrom, the light oil agglomerating liquid being added at not more than of the order of 20 wt % of the total weight of the solids of the coal-in-water slurry, then
(c) separating the micro-agglomerated, impurity liberated coal from the dissociated inorganic impurities and water, then
(d) mixing the separated, micro-agglomerated, impurity liberated coal with heavy fuel oil, having a specific gravity greater than of the order of 0.9 g/cm^3, as agglomerating liquid to produce relatively larger agglomerates comprising an average size no greater than of the order of 3 mm and primarily dissociate water with some inorganic impurities which were present in the micro-agglomerated, impurity liberated coal and leave a residual amount of at least of the order of 5 wt % water in the relatively larger agglomerates, then
(e) separating the relatively larger agglomerates from the dissociated water and inorganic impurities, and then
(f) mixing the separated, relatively larger agglomerates with make-up heavy oil additive to form a coal-in-oil combustible fuel.

4,284,414

MIXED ALKYL ESTERS OF INTERPOLYMERS FOR USE IN CRUDE OILS

Charles P. Bryant, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 14, 1980, Ser. No. 196,975
Int. Cl.³ C10G *73/38*
U.S. Cl. 44—62 **9 Claims**

1. A crude oil composition having a minor amount of at least one mixed alkyl ester made by reacting;
(A) interpolymers having a RSV in a range from about 0.1 to about 2.0 which contain units derived from (i) at least one α,β-unsaturated dicarboxylic acid, or derivative thereof and (ii) one or more vinyl aromatic monomers having up to about 12 carbon atoms, the molar ratio of (i) to (ii) being from about 1:1 to about 1:3, with
(B) a mixture of two or more monohydric alkanols containing from 18 to 40 carbon atoms, at least one of the alkanols containing 18 carbon atoms.

4,284,415

ADDITIVES FOR HYDROCARBON OILS

Gary W. Y. Kwong, Palatine, Ill., and Joseph Levy, Deerfield Beach, Fla., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 8, 1979, Ser. No. 92,383
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—72 **13 Claims**

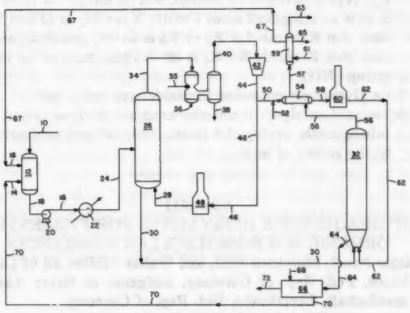
1. A composition comprising a major amount of a hydrocarbon oil containing from about 0.0001% to about 1% of the reaction product of 1 molar proportion of an alkoxyalkylamine, wherein said amine is a primary amine, said alkoxy group contains from about 1 to about 25 carbon atoms, and said alkyl group is an alkylene containing 2 to about 10 carbon atoms, with about 0.5 to about 2.0 molar proportions of an epihalohydrin selected from the group consisting of epihalohydrin, 1-halo-3,4-epoxybutane, 1-halo-2,3-epoxybutane, 1-halo-4,5-epoxypentane, and 1-halo-3,4-epoxypentane, at a temperature from about 40° C. to about 150° C. in the presence of an inorganic base.

4,284,416

INTEGRATED COAL DRYING AND STEAM GASIFICATION PROCESS

Nicholas C. Nahas, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1979, Ser. No. 103,648
Int. Cl.³ C10J *3/00, 3/54*
U.S. Cl. 48—197 R **26 Claims**

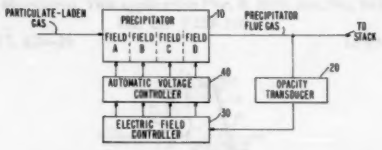


1. A process for drying an aqueous slurry of carbonaceous solids containing water-soluble gasification catalyst constituents and subsequently gasifying the dried solids which comprises:
(a) contacting said aqueous slurry of carbonaceous solids containing said water-soluble gasification catalyst constituents with superheated steam in a fluidized bed drying zone, said superheated steam having a temperature sufficiently higher than the temperature in said drying zone to convert more than about 80 weight percent of the water in said slurry into steam and to deposit said water-soluble gasification catalyst constituents onto said carbonaceous solids;
(b) withdrawing carbonaceous solids of reduced water content and impregnated with said gasification catalyst constituents from said drying zone and passing said solids to a gasification zone maintained at gasification conditions;
(c) withdrawing steam from said drying zone and passing at least a portion of said steam to said gasification zone; and
(d) gasifying said catalyst impregnated carbonaceous solids in said gasification zone with said steam passed to said gasification zone.

4,284,417
METHOD FOR CONTROLLING ELECTRIC POWER SUPPLIED TO CORONA GENERATING ELECTRODES IN AN ELECTROSTATIC PRECIPITATOR

Robert O. Reese, Lancaster; Karl R. Wieber, Middletown, and James A. Sholly, Lebanon, all of Pa., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Mar. 17, 1980, Ser. No. 130,642
Int. Cl.³ B03C 3/68
U.S. Cl. 55—2 6 Claims



1. A method for controlling electric power supplied to corona generating electrodes in an electrostatic precipitator, said method comprising the steps of:

(a) generating a signal indicative of the opacity level of flue gas exiting from said precipitator;

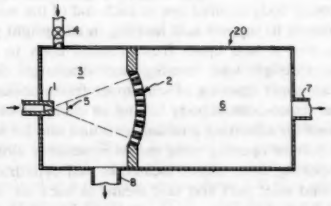
(b) comparing said opacity level signal with selectable upper and lower limits, said limits defining a permissible opacity range for said flue gas; and

(c) activating control circuitry for causing the electric power supplied to said corona generating electrodes to increase when said opacity level signal exceeds said upper limit and to decrease when said opacity level signal falls below said lower limit.

4,284,418
PARTICLE SEPARATION METHOD AND APPARATUS

Ronald P. Andres, Princeton, N.J., assignor to Research Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,906
Int. Cl.³ B01D 53/22, 59/12
U.S. Cl. 55—16 35 Claims



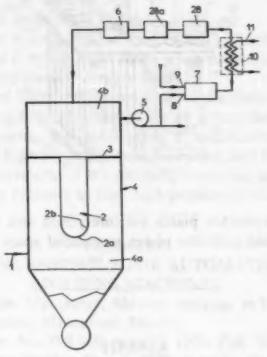
1. A process for separating a gas or aerosol mixture into its constituents of different mass comprising the steps of: (a) accelerating the mixture in a carrier gas to a high velocity gas flow, (b) differentially decelerating the constituents of the flow through a background gas at a controlled pressure, (c) directing the decelerating flow onto a membrane, (d) withdrawing an output enriched in a high particle mass species which preferentially passes through the membrane, and (e) withdrawing another output enriched in a low particle mass species which is preferentially blocked by the membrane.

7. A particle separator comprising means for introducing a gas flow containing heavier and lighter species of particles, means for maintaining a background gas in a region of the gas flow for differentially decelerating the particle species, and means including a membrane downstream of said region for separating heavier from lighter particle species.

4,284,419
DECLOGGING PROCESS FOR FILTRATION INSTALLATION AND IMPROVED FILTRATION INSTALLATION

Jean Remillieux, Meudon-la-Foret, France, assignor to Air Industrie, Courbevoie, France

Filed Mar. 4, 1980, Ser. No. 127,068
Claims priority, application France, Mar. 5, 1979, 79 05609
Int. Cl.³ B01D 46/04; C21B 7/22, 9/14, 9/16
U.S. Cl. 55—96 10 Claims



1. In a method of pneumatically declogging a filtering element of a filtration installation in which dust-laden gas having reducing properties is passed through the filtering element whereby dust is deposited on the filtering element and dust-free gas issues therefrom and in which a flow of inert gas is periodically used to dislodge and deposited dust, the improvement wherein said inert gas is obtained by oxidizing a portion of the dust-free gas issuing from the filtering element.

6. In filtration apparatus comprising filtering element means for filtering dust-laden gas having reducing properties, means for passing said gas through said filtering element means whereby dust is deposited on said filtering element means and dust-free gas issues therefrom, and means for periodically introducing a flow of inert gas through said filtering element means in a direction opposite to the direction of flow of said dust-laden gas to dislodge said deposited dust, the improvement which comprises means for oxidizing a portion of the dust-free gas issuing from the filtering element means to obtain said inert gas, and means for supplying the oxidized, inert, gas, to said inert gas flow introducing means.

4,284,420
ELECTROSTATIC AIR CLEANER WITH SCRAPER CLEANING OF COLLECTOR PLATES

Ralph A. Borysiak, 2101 Oak Park Dr., South Bend, Ind. 46617

Filed Aug. 27, 1979, Ser. No. 70,014
Int. Cl.³ B03C 3/12, 3/74
U.S. Cl. 55—114 14 Claims

1. An electrostatic precipitator comprising;

a member defining an air passage,

two sets of oppositely electrically charged spaced substantially parallel collector plates, each set having a portion positioned in said member,

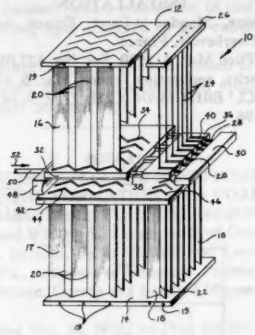
a base plate mounting the collector plates of each set,

plate scraping means cooperating with each set of collector plates,

means connecting the base plate of each set with the scraping means cooperating with the other set in selected spaced relation, and

means guiding movement of one plate set and its connected

scraping means relative to the other plate set and its connected scraping means between a position in which said



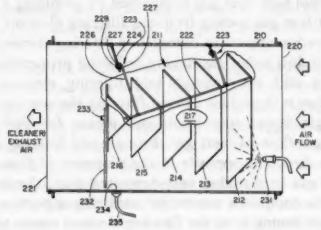
sets of collector plates are interposed and a position in which said collector plates are spaced apart.

4,284,421

AIR-CLEANING APPARATUS

Arthur G. Howard, 7711 Newport Way, Apt. D, Indianapolis, Ind. 46250

Continuation-in-part of Ser. No. 923,713, Jul. 12, 1978. This application Feb. 15, 1980, Ser. No. 121,961
Int. Cl.³ B01D *47/02*
U.S. Cl. 55—222 **16 Claims**



1. An exhaust-cleaning apparatus for removing contaminant material from a hot exhaust gas from a structure exhaust stack, said exhaust-cleaning apparatus comprising:

a main housing portion communicating with said structure exhaust stack;

a rotary drum member disposed within said main housing portion;

contaminant-collecting surface means disposed within said drum member and including the interior surface of said drum member, said contaminant collecting surface means including a plurality of similarly shaped annular members spaced apart and sequentially arranged in order of decreasing size;

sprayer means arranged within said main housing portion and directed toward said contaminant-collecting surface means for spraying a chemical solution from a suitable source onto said contaminant-collecting surface means, said contaminant material being soluble to said chemical solution; and

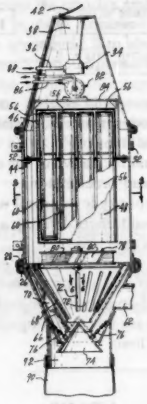
a first fan arrangement in communication with said main housing portion for routing said hot exhaust gas through said main housing.

4,284,422

INDUSTRIAL VACUUM CLEANER

Omer Ferland, C.P.138, Village Sakami, Nouveau Québec Baie James, Canada (J0Y 3A0)

Filed Jun. 9, 1980, Ser. No. 158,016
Claims priority, application Canada, Jun. 12, 1979, 329557
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—300 **4 Claims**

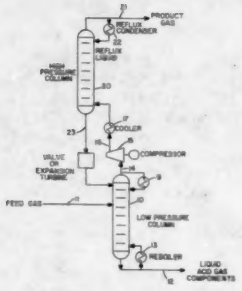


1. An industrial vacuum cleaner comprising a housing including a main cylindrical body and an upper and a lower frusto-conical body secured one to each end of the main body, support means to support said housing in an upright position, means located in said upper frusto-conical body to suck air upwardly through said housing and discharge the same through an upper opening of said upper frusto-conical body, said lower frusto-conical body having an inlet port in the side wall thereof for admitting dust-laden air into said housing, and having a bottom opening, plug means removably closing said bottom opening, filter means located in said cylindrical body between said inlet port and said means to suck air, and preseparator means for preventing water which might be present in the dust-laden air from attaining the filter means, said preseparator means including an outer and an inner frusto-conical tube fixedly mounted within said lower frusto-conical body in spaced relationship one with the other and with said lower frusto-conical body, annular partition wall means located at the connection of said cylindrical body with the lower frusto-conical body and separating the inside of said cylindrical body from the spaces between said lower frusto-conical body and said outer and inner frusto-conical tubes, said inner frusto-conical tube being in full communication with the inside of said cylindrical body, said outer frusto-conical tube having an inlet opening diametrically opposite said inlet port and being otherwise imperforate, said inner frusto-conical tube having a plurality of baffled openings diametrically opposite said inlet opening, said two frusto-conical tubes each having a bottom opening registering with each other and with the bottom opening of said lower frusto-conical body.

4,284,423
SEPARATION OF CARBON DIOXIDE AND OTHER ACID GAS COMPONENTS FROM HYDROCARBON FEEDS CONTAINING ADMIXTURES OF METHANE AND HYDROGEN

James M. Eakman, Houston, Tex., and Harry A. Marshall, Madison, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 878,044, Feb. 15, 1978, abandoned, which is a continuation of Ser. No. 692,986, Jun. 4, 1976, abandoned. This application Dec. 8, 1978, Ser. No. 967,648
Int. Cl.³ F25J 3/02
U.S. Cl. 62—28 **13 Claims**



1. In a process for the separation of carbon dioxide from a gaseous mixture comprising carbon dioxide and methane, the improvement comprising:

(a) forming a feed stream from said gaseous mixture containing from about 6 to about 35 mol percent hydrogen and from about 30 to about 85 mol percent methane;

(b) distilling said feed in a low pressure zone while maintaining said zone at a total pressure below about 1073 psia with the upper stage of said zone at a temperature above about −100° F., said low pressure zone being operated such that the sum of the carbon dioxide partial pressure and the methane partial pressure, in psia at all points in the low pressure zone is greater than

$$-10238-T(237.36+1.285T)$$

when T is the temperature in degrees Fahrenheit and when T is within the range from −100° F. to −69.9° F.;

(c) separating carbon dioxide as a primary component of a liquid bottom product withdrawn therefrom, while withdrawing a vapor effluent from said low pressure zone; and

(d) introducing said vapor effluent into a high pressure zone maintained at a pressure above about 600 psia and a temperature above about −170° F., said high pressure zone being operated such that the total pressure in psia is less than

$$673+488Y_{H2,2}+11{,}280Y_{H2,2}^{2}$$

where:

$$Y_{H2,2}=\frac{Z_{H2}}{\left(1+\frac{L}{D}\right)(Z_{CH4}+Z_{H2}+Z_{CO}+Z_{N2})}$$

and:

Z_{H2}=mol fraction H_2 in feed
Z_{CO}=mol fraction CO in feed (when present)
Z_{N2}=mol fraction N_2 in feed (when present)
Z_{CH4}=mol fraction CH_4 in feed
L/D=mol liquid reflux/mols vapor distillate but greater than:

$$P_{tot,2}>\frac{705\text{ psia}}{\left[Z_{CH4}+\left(\frac{L}{D}\right)(Z_{CH4}+Z_{H2}+Z_{CO}+Z_{N2})\right]\Big/\left[\left(1+\frac{L}{D}\right)(Z_{CH4}+Z_{H2}+Z_{CO}+Z_{N2})\right]}$$

where:

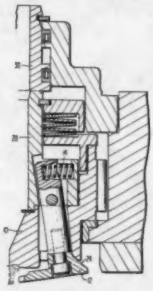
Z_{H2}=mol fraction H_2 in feed
Z_{CO}=mol fraction CO in feed (when present)
Z_{N2}=mol fraction N_2 in feed (when present)
Z_{CH4}=mol fraction CH_4 in feed
L/D=mol liquid reflux/mols vapor distillate.

(e) separating a liquid, a part of which is recycled to the low pressure zone, and recovering a hydrocarbon product from said high pressure distillation zone, said low pressure zone being operated at a pressure more than about 50 psia below the pressure in said high pressure zone.

4,284,424
NECK RING ASSEMBLY FOR AUTOMATIC BLOW MOLDING MACHINES

John K. Martin, Monterrey, Mexico, assignor to Investigacion Fic Fideicomiso, Monterrey, Mexico

Division of Ser. No. 898,080, Apr. 20, 1978, Pat. No. 4,200,449. This application Dec. 3, 1979, Ser. No. 99,545
Int. Cl.³ C03B 9/325
U.S. Cl. 65—241 **2 Claims**



1. A rotatable ware supporting neck ring assembly for a blow molding machine comprising in combination:

a horizontal support member;

an annular bushing mounted for rotation on a vertical axis of said support member;

a plurality of segments each having a foot portion which in the closed, ware supporting position of the assembly are in intimate contact with each other and with said bushing and substantially coextensive with the undersurface of said bushing, each of said segments being pivotally supported with respect to, and spring biased radially outwardly of, said bushing;

means defining a radially inwardly opening annular groove in the adjoining inner surfaces of said bushing and said segments;

means defining a first cam surface inclined to the vertical on the radial outer surface of each of said segments;

means defining a second cam surface with is annular, rigidly carried by said support member and engaging the cam surfaces of each of said segments;

means mounting said bushing and segments for sliding vertical movement on said support member between upper and lower positions with respect to said second cam surface so that in the upper of said positions, said segments are cammed radially inwardly into tight engagement with

each other and with said bushing and in the lower position, said segments are biased out of engagement with said bushing;

further means biasing said bushing and segments toward the upper of said positions; and

hydraulic means for moving said bushing and segments downwardly against the force of said further biasing means and against the frictional forces between said first and second cam surfaces.

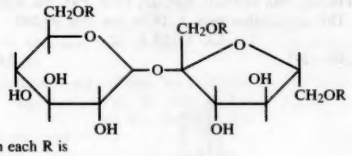
4,284,425

METHOD OF INCREASING THE RECOVERABLE SUGAR FROM SUGAR BEETS

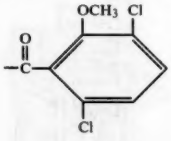
George F. Luteri, Mt. Prospect, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 13, 1980, Ser. No. 159,405
Int. Cl.³ A01N *37/00*
U.S. Cl. 71—27 **3 Claims**

1. A method for increasing the recoverable sugar from sugar beets which comprises contacting the sugar beet plants with from about 0.1 ounce to about 4 lbs. per acre of sucrose tri(2-methoxy-3,6-dichlorobenzoate) having the formula



wherein each R is



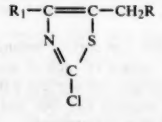
4,284,426

2-CHLORO-4,5-DISUBSTITUTED-THIAZOLES USEFUL AS HERBICIDAL SAFENERS

Robert K. Howe, Bridgeton, and Len F. Lee, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 1, 1979, Ser. No. 80,751
Int. Cl.³ A01N *43/78;* **C07D** *277/20*
U.S. Cl. 71—90 **21 Claims**

1. A method of reducing herbicidal injury to sorghum plants due to application thereto of acetanilide herbicides which comprises applying to the plant locus a non-phytotoxic safening effective amount of a compound having the formula



where R is equal to halogen, hydroxy, lower alkoxy or benzyloxy R_1 is lower alkyl, halo (lower) alkyl, phenyl, or phenyl substituted by one to three groups, which may be the same or different, selected from the group consisting of halogen, lower alkyl, trifluoromethyl and cyano.

4,284,427

HERBICIDAL COMPOSITION FOR PADDY FIELDS

Rokuro Akahira, Higashikurume, and Shinzo Someya, Tokorozawa, both of Japan, assignors to Kanesho Company Limited, Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 96,976
Int. Cl.³ A01N *43/70, 37/46*
U.S. Cl. 71—93 **16 Claims**

1. A herbicidal composition, consisting essentially of an effective amount of a mixture of, as active ingredients, N-chloroacetyl-N-(2,6-diethylphenyl)-glycineethylester and 2,4-bis(ethylamino)-6-methylthio-1,3,5-triazine in a weight ratio of 1:1–3:1, respectively.

4,284,428

SEPARATION OF CONTAMINANT MATERIAL FROM COPPER WIRE AND CABLE

Everett J. Canning, Jr., Plainsboro, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,891
Int. Cl.³ C22B *25/06*
U.S. Cl. 75—64 **6 Claims**

1. A process of removing contaminants from copper wire and cable scrap comprising the steps of:

(a) adding the scrap to a molten fused salt bath consisting essentially of a mixture of sodium nitrate and potassium nitrate at a temperature of from 350° C.–450° C.;

(b) maintaining the scrap in the molten nitrate bath for a time sufficient to burn away essentially all non-metallic contaminants;

(c) separating all molten material from the remaining copper scrap;

(d) treating the copper scrap in a bath containing molten cuprous chloride for a time sufficient to remove any tin impurities on the copper scrap; and

(e) separating the decontaminated copper scrap from the molten cuprous chloride.

4,284,429

ALUMINUM BASE CASTING ALLOY

John Savas, 9710 Brecksville Rd., Brecksville, Ohio 44141

Filed Jan. 21, 1980, Ser. No. 113,824
Int. Cl.³ C22C *21/02*
U.S. Cl. 75—141 **7 Claims**

1. An aluminum casting alloy consisting essentially of 5.0% to 22.0% silicon, 0.5 to 7.0% copper, 1.5 to 5.5% magnesium, 2.0 to 8.0% zinc, iron not over 1.35%, manganese not over 0.65%, nickel not over 0.50%, titanium not over 0.20%, and chromium and other residual elements not over 0.15%, balance aluminum.

4,284,430

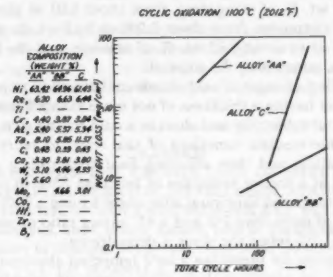
CYCLIC OXIDATION RESISTANT TRANSVERSE DUCTILE FIBER REINFORCED EUTECTIC NICKEL-BASE SUPERALLOYS

Michael F. Henry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1979, Ser. No. 34,154
Int. Cl.³ C22C *19/03*
U.S. Cl. 75—170 **10 Claims**

6. An alloy capable of developing in a unidirectionally solidified anisotropic article having transverse ductility, cyclic oxidation resistance, hot corrosion resistance, and high temperature strength properties, the alloy consisting essentially of

about, on a weight basis, 2–9% Re, less than 0.8% Ti, 0–10% Cr, 0–10% Al, 3–15% Ta, 0.1–1% C, 0–10% Co, 0–10% W,



0–1.0% V, 3.01–10% Mo, 0–3% Cb, the balance being essentially Ni and incidental impurities.

4,284,431

METHOD FOR THE PRODUCTION OF SINTERED POWDER FERROUS METAL PREFORM

Eiji Ohno, Tokyo, and Kazuo Chikugo, Hiratsuka, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 931,320, Aug. 7, 1978, Pat. No. 4,202,689. This application Sep. 7, 1979, Ser. No. 73,377

Claims priority, application Japan, Aug. 5, 1977, 52-93375

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—212 **5 Claims**

1. A method for the production of sintered powder ferrous metal preforms comprising the steps of; heating said ferrous metal particles to a temperature of about 130° C. to 150° C.;

coating finely divided ferrous metal particles with thermoplastic phenol resins having an effective carbon content of 10 to 40 percent by adding said phenol resins to said ferrous metal particles, wherein said phenol resins are present from about 1.0 to 7.0 percent of the total mixture;

cooling said resin coated ferrous metal particles by blowing cooling air thereto;

packing a mold with said resin coated ferrous metal particles;

compacting said resin coated ferrous metal particles in the mold by applying pressure of 3 to 5 tons/cm^2 thereon to produce a compacted green preform sufficient to ensure adequate strength for handling after pressing; and

heating said green preform in an oxidation free atomospheric current to a temperature within the range of about 1100° C. to 1250° C. for a time sufficient to achieve reduction and sintering of said green preform.

4,284,432

CERAMIC POWDER MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Katsutoshi Nishida; Michiyasu Komatsu, both of Yokohama, and Tadashi Miyano, Sagamihara, all of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki, Japan

Continuation of Ser. No. 867,299, Jan. 5, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 78,584

Claims priority, application Japan, Jan. 13, 1977, 52-1949; Sep. 22, 1977, 52-113235

Int. Cl.³ C04B *35/58, 35/50*

U.S. Cl. 106—73.2 **2 Claims**

1. A method of reducing the oxygen content of a ceramic powder material prior to molding including the step of heating raw ceramic powder consisting essentially of silicon nitride to a temperature ranging between 1,400° C. and 1,900° C. in the presence of a nonsintered or a sintered molding of ceramic material, said molding formed of a compound selected from the group consisting of aluminum nitride, boron nitride, titanium nitride, silicon nitride and aluminum oxide and having a porosity of at least 10%, thereby reducing the amount of oxygen combined with impurities unavoidably included in said raw ceramic powder material to an amount less than 2.0% by weight as measured by activation analysis, the thus treated powder when molded exhibiting high temperature mechanical strength.

4,284,433

ADDITIVES FOR WATER-HARDENING BINDING AGENTS

Alois Aignesberger, Trostberg; Jean-Pierre Deppen, Tacherting, and Hans-Günter Rosenbauer, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,816

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817080

Int. Cl.³ C04B *31/30;* C08H *5/04;* C08K *3/06;* C08J *3/20*

U.S. Cl. 106—90 **13 Claims**

1. Solid additive for modifying water-hardening binding agents, which additive comprises aggregates consisting of mechanically compressed fine particles with a grain size of from 0.1 to 10 mm and being composed of an agent consisting of a naphthalenesulphonic acid derivative-formaldehyde condensate, a resin based on an amino-s-triazine with at least two NH_2 groups and modified with sulphite or sulphonic acid, a sulphite- or sulfonic acid-modified melamine-formaldehyde polycondensate, a copolymer based on styrene and acrylonitrile, a lignin sulfonate, or a phenol-sulphonic acid-formaldehyde polycondensation product.

4,284,434

PROCESS FOR SPRAY CLEANING OF METAL SURFACES

Herbert Lingmann, Hilden; Hermann Drosdziok, Düsseldorf, and Rudolf Peifer, Düsseldorf-Mörsenbroich, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 888,306, Mar. 20, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,027

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2712900

Int. Cl.³ C23G *1/14*

U.S. Cl. 134—2 **8 Claims**

1. A method of cleaning metal surfaces comprising spraying a metal surface at a pressure of 10 atmospheres gauge or higher with an aqueous solution consisting essentially of water containing a mixture of active substances of

(a) at least one water-soluble alkanolamine salt of alkanolamines having 2 to 9 carbon atoms, of monocarboxylic acids selected from the group consisting of benzoic acid, tertiary butylbenzoic acid, phenylacetic acid, cinnamic acid, caprylic acid, capric acid, isooctanoic acid, isononanoic acid, isodecanoic acid and mixtures thereof,

(b) at least one nonionic surface-active compound having an HLB value of between 14 and 20, and

(c) at least one quaternary ammonium surface-active compound, wherein the concentration of the mixture of active substances (a), (b) and (c) in the aqueous solution is from 0.1% to 4% by weight, the weight ratio of (b) to (c) is from 20:1 to 1:1, the weight ratio of (a) to (b)+(c) is from 20:1 to 1:20, and sufficient alkanolamine having 2 to 9 carbon atoms is present whereby the pH of the aqueous solution is from 7.5 to 11, wherein the aqueous solution is maintained at a preselected temperature between 20° C. and 80° C. and the components (a), (b) and (c) are so selected that the turbidity point of said aqueous solution lies from 5° C. to 25° C. below said preselected temperature.

4,284,435

METHOD FOR SPRAY CLEANING PAINTED SURFACES

Derek J. Fox, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Nov. 28, 1979, Ser. No. 98,156

Int. Cl.[3] B08B *3/08*

U.S. Cl. 134—2 **7 Claims**

1. A method of cleaning large painted surfaces without damaging the paint comprising spraying the surface at a pressure of 400 to 1000 psi with an aqueous composition comprising 0.02 to 3% by weight of a chelating agent, from about 0.01 to 1.2% of a bis(ethoxylated) quaternary ammonium compound having a degree of ethoxylation of from 10 to 60 moles of ethylene oxide, from 0.005 to 0.5% of an ethoxylated alcohol, nonionic surfactant, from 0 to 0.5% by weight sodium metasilicate and the balance comprising water.

4,284,436

PROCESS FOR THE PRODUCTION OF BANDS OR SHEETS OF ISOTROPIC MECHANICAL PROPERTIES FROM COPPER OR COPPER ALLOYS

Mihaly Stefan, 6, Mak u., Budapest 1022; Lajos Almashegyi, 6, Regiposta u., Budapest 1052; Csaba Horvath, 73a, Nemetvölgvi u., Budapest 1124; Agnes Madarasz nee Helesfai, 9, Venusz u., Budapest 1214; Peter Arato, 1, Zrinyi u., Budapest 1051, and Jozsef Geiger, 119a, Hollandi u., Budapest 1213, all of Hungary

Continuation-in-part of Ser. No. 735,049, Oct. 22, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,758

Claims priority, application Hungary, Oct. 24, 1975, CE 1060

Int. Cl.[3] C22B *15/14*

U.S. Cl. 148—2 **2 Claims**

1. Process for the production of bands or sheets of isotropic mechanical properties from a melted bath of copper or copper alloys containing from 0% to a small amount of lead, said bands or sheets being subjectable to an intensive cold shaping, comprising adding to the melted bath ZrB_2 in an amount of between 0.01% and 0.075% by weight, and replacing not more than 50% by weight of the zirconium content of the added ZrB_2 by at least one of the groups of metals consisting of Ti, V, Nb, Ca, Mg, and Co, then solidifying the metal bath containing the additives in the form of a band.

4,284,437

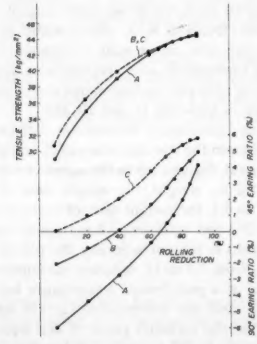
PROCESS FOR PREPARING HARD TEMPERED ALUMINUM ALLOY SHEET

Yoshio Baba, Nagoya; Shin Tsuchida, Toyoake, and Masaaki Tobinaga, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 105,008

Int. Cl.[3] C22F *1/04;* **C22C** *21/06*

U.S. Cl. 148—11.5 A **14 Claims**



1. A process for preparing a hard tempered aluminum alloy sheet from an aluminum base alloy consisting essentially of from about 4 to about 6 wt. % magnesium, at least one component selected from the group consisting of from about 0.1 to about 0.7 wt. % of manganese, from about 0.01 to about 0.05 wt. % of zirconium, from about 0.005 to 0.12 wt. % of vanadium and up to about 0.05 wt. % of titanium, and the balance aluminum, comprising the steps of:

hot rolling an ingot of said aluminum base alloy to produce a sheet having a thickness of not more than 2.5 mm; then, without subjecting said sheet to a cold rolling step, effecting intermediate annealing of said sheet to recrystallize said alloy; and then effecting final cold rolling of said sheet at a rolling reduction of less than 85% to obtain a hard tempered aluminum alloy sheet having a 90% earing ratio of more than 2% and a 45° earing ratio of not more than 3.5% when the sheet is deep drawn.

7. A process for preparing a hard tempered aluminum alloy sheet from an aluminum base alloy consisting essentially of from about 4 to about 6 wt. % magnesium, at least one component selected from the group consisting of from about 0.1 to about 0.7 wt. % of manganese, from about 0.01 to about 0.05 wt. % of zirconium, from about 0.005 to 0.12 wt. % of vanadium and up to about 0.05 wt. % of titanium, and the balance aluminum, comprising the steps of:

hot rolling an ingot of said aluminum base alloy to produce a sheet having a thickness of not more than 2.5 mm, said hot rolling step being performed so that the finishing temperature is from about 300 to about 350° effective to recrystallize said alloy; and

then effecting final cold rolling of said sheet at a rolling reduction of less than 85% to obtain a hard tempered aluminum alloy sheet having a 90° earing ratio of more than 2% and a 45° earing ratio of not more than 3.5% when the sheet is deep drawn.

4,284,438

MANUFACTURE OF STEEL PRODUCTS

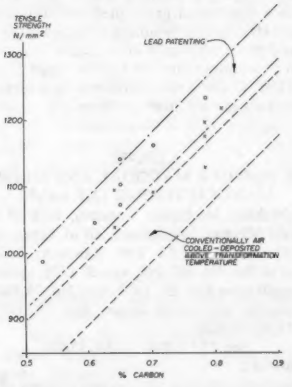
Donald Barwick, Ormesby, and Malcolm Brownlee, Middlesbrough, England, assignors to British Steel Corporation, England

Continuation-in-part of Ser. No. 917,272, Jun. 20, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,227

Claims priority, application United Kingdom, Jun. 20, 1977, 25695/77

Int. Cl.[3] C21D *1/25, 8/08*

U.S. Cl. 148—12 B **8 Claims**



1. A process for producing hot rolled semi-killed or killed carbon-manganese steel rod having a manganese content of not more than about 0.8% including the steps of

hot rolling the steel in a continuous rolling mill, the rod exiting from the last stand of the mill having a temperature in excess of 1000° C.,

superficially cooling the rod in water from a temperature of above 1000° C. to an equalisation temperature of between 300° C. and 700° C., to produce a martensitic surface layer,

laying the rod on a moving conveyor so that the rod forms flat overlapping non-concentric rings,

allowing the rod to be cooled in air as it passes along the conveyor and then collecting the non-concentric rings to form coils.

4,284,439

PROCESS FOR THE PRODUCTION OF SHEET AND STRIP FROM FERRITIC, STABILIZED, STAINLESS CHROMIUM-MOLYBDENUM-NICKEL STEELS

Göran Gemmel, and Christer Aslund, both of Torshälla, Sweden, assignors to Granges Myby AB, Nybybruk, Sweden

PCT No. PCT/EP 78/00011, § 371 Date Apr. 17, 1979, § 102(e) Date April 17, 1979, PCT Pub. No. WO79/00100, PCT Pub. Date Mar. 8, 1979

This PCT application filed Aug. 16, 1978, Ser. No. 114,087

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737116

Int. Cl.³ C21D *8/02*; C22C *38/44*

U.S. Cl. 148—12 EA **16 Claims**

1. A process for the production of sheet and strip from ferritic, stabilised, stainless chromium-molybdenum-nickel steels which are hot-rolled in the form of cast blocks to form heavy plate or crude strip and subsequently cold-rolled to the required thickness, characterised in that the blocks are hot-rolled at temperatures above about 850° C. to form heavy plate or crude strip and immediately afterwards the heavy plate or crude strip thus formed is suddenly quenched with water to a temperature slightly below 450° C. and is then subsequently annealed to a temperature above 850° C., the annealing step being followed by rapid cooling from temperatures above about 850° C. to temperatures below 500° C.

4,284,440

RARE EARTH METAL-COBALT PERMANENT MAGNET ALLOY

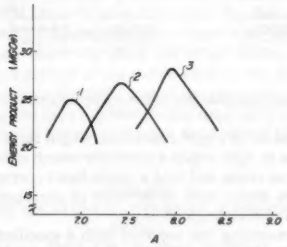
Masaaki Tokunaga; Chitoshi Hagi, and Hirokazu Murayama, all of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jun. 20, 1977, Ser. No. 808,365

Claims priority, application Japan, Jun. 18, 1976, 51-71140

Int. Cl.³ H01F *1/04*, *1/14*

U.S. Cl. 148—31.57 **10 Claims**



1. A permanent magnet alloy consisting essentially of a composition expressed by a formula:

$$R(Co_{1-x-y-z}Fe_xCu_ySi_z)_A$$

wherein

R is one of the rare earth metal elements, M is at least Si or combination of Si with Ti and Mo, and

$0.1 \leqq x \leqq 0.4$, $0.02 \leqq y \leqq 0.25$, $0.001 \leqq z \leqq 0.15$ and $6.5 \leqq A \leqq 8.3$.

8. A permanent magnetic alloy consisting essentially of a composition expressed by a formula:

$$R(Co_{1-x-y-z}Fe_xCu_ySi_z)_A$$

wherein R is at least one of the rare earth metal elements, $0.1 \leqq x \leqq 0.4$, $0.02 \leqq y \leqq 0.25$, $0.001 \leqq z \leqq 0.15$ and $6.5 \leqq A \leqq 8.3$.

10. A permanent magnetic alloy consisting essentially of a composition expressed by a formula:

$$R(Co_{1-x-y-z}Fe_xCu_ySi_z)_A$$

wherein R is Sm, $0.1 \leqq x \leqq 0.4$, $0.02 \leqq y \leqq 0.25$, $0.001 \leqq z \leqq 0.15$ and $6.5 \leqq A \leqq 8.3$.

4,284,441

METHOD FOR IMPROVEMENT OF MAGNETIC PROPERTY OF THIN STRIP OF AMORPHOUS ALLOY

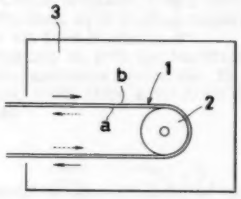
Takehiko Satoh, Musashino; Sonoko Tsukahara, and Tachiro Tsushima, both of Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,693

Claims priority, application Japan, Mar. 1, 1979, 54-22523

Int. Cl.³ H01F *1/00*

U.S. Cl. 148—120 **6 Claims**



1. A method for improving the magnetic properties of a thin strip of amorphous alloy, comprising bending the thin strip of amorphous alloy by means of a roller having a fixed radius of curvature in such a manner that the surface opposite to the surface which came into contact with the cooling roller for producing amorphous alloy to impart tensile force and compressive force to the surfaces at a temperature lower than the crystallization transition point of the alloy, thereby promoting the alleviation of the internal stress present in the thin strip and improving the magnetic properties of the alloy.

4,284,442

CASTABLE TNT COMPOSITIONS CONTAINING A BROAD SPECTRUM PREFORMED THERMOPLASTIC POLYURETHANE ELASTOMER ADDITIVE

H. William Voigt, Jr., Stanhope, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 885,716, Mar. 13, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,598

Int. Cl.³ C06B *45/10*

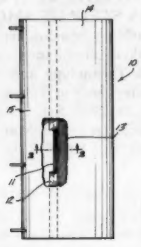
U.S. Cl. 149—19.4 **9 Claims**

1. A castable explosive composition consisting essentially of 2,4,6-trinitrotoluene (TNT) and about from 0.05 to 10% by weight, based on the TNT content of the explosive composition, of a thermoplastic polyurethane elastomer, which is dissolved in the TNT and is the reaction product of an organic diisocyanate and a hydroxy terminated polyester or a hydroxy terminated polyether containing essentially no free isocyanate groups prior to incorporation thereof in the explosive composition.

4,284,443
SINGLE STAGE HOT BONDING METHOD FOR PRODUCING COMPOSITE HONEYCOMB CORE STRUCTURES

R. John Hilton, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 9,369, Feb. 5, 1979, abandoned, which is a division of Ser. No. 857,264, Dec. 5, 1977. This application Apr. 17, 1979, Ser. No. 30,749
Int. Cl.[3] B32B *3/12*
U.S. Cl. 156—60 14 Claims



1. A single stage hot bonding process for forming composite honeycomb core structures comprising the steps of:

bonding a primary load carrying honeycomb core to an edge of a shape defining honeycomb core to form a combined honeycomb core;

forming opposed undercut regions in said combined honeycomb core in the region of said primary load carrying honeycomb core by reducing the thickness of said primary load carrying honeycomb core to less than the thickness of said shape defining honeycomb core;

placing a first skin on a working surface;

applying adhesive to the exposed side of said first skin;

attaching a first spar cap to said first skin;

applying adhesive to the exposed side of said first spar cap;

attaching said combined honeycomb core to said first spar cap and said first skin such that one of said opposed undercut regions of said combined honeycomb core overlies and is attached to said first spar cap and the surface of said shape defining honeycomb core portion of said combined honeycomb core adjacent to said undercut region overlies and is attached to said first skin;

applying adhesive to the exposed side of said combined honeycomb core;

attaching a second spar cap to the other one of said opposed undercut regions of said combined honeycomb core;

applying adhesive to the exposed side of said second spar cap;

attaching a second skin to said second spar cap and said exposed side of said combined honeycomb core; and,

simultaneously heating said attached combined honeycomb core, said first and second spar caps and said first and second skins to cure said adhesives and simultaneously form bonds between said combined honeycomb core, said first and second spar caps and said first and second skins where they join.

4,284,444
ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME

Bruce S. Bernstein, Somerville, N.J.; Seymour Hyman, New York, N.Y., and Ramesh C. Kapoor, Seaford, Del., assignors to Herculite Protective Fabrics Corporation, New York, N.Y.

Continuation of Ser. No. 821,045, Aug. 1, 1977, abandoned, which is a continuation of Ser. No. 255,282, May 19, 1972, abandoned, which is a division of Ser. No. 112,053, Feb. 2, 1971, Pat. No. 3,705,938, which is a continuation-in-part of Ser. No. 593,267, Nov. 10, 1966, abandoned. This application Apr. 23, 1979, Ser. No. 32,593
Int. Cl.[3] B32B *31/04, 31/12, 31/30*
U.S. Cl. 156—60 37 Claims

1. A method for producing a polymeric article having active properties comprising antibacterial, antifungal and combinations thereof comprising

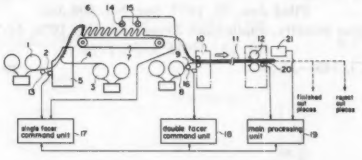
adherently applying to at least one surface of a preformed, solid, non-porous polymeric substrate an adherent, solid, non-porous layer of a polymeric composition, said composition comprising at least one non-volatile active agent selected from the group consisting of antibacterial, antifungal and combinations of antibacterial and antifungal active agents distributed within said polymeric composition and capable of migrating from said layer into and throughout said substrate, and

maintaining said layer adhered to said surface of said substrate to permit a sufficient amount of said active agent to migrate from said layer into said substrate to impart an effective level of activity throughout said substrate, including a surface of said substrate which is not directly contacted by said layer.

4,284,445
PRODUCTION QUANTITY ADJUSTING APPARATUS FOR CORRUGATORS

Tadayuki Shimizu, Kanagawa, Japan, assignor to Nihon Electronic Industry Co., Ltd., Odawara, Japan

Filed May 11, 1979, Ser. No. 38,134
Claims priority, application Japan, May 17, 1978, 53-57515
Int. Cl.[3] G05G *15/00;* B31F *5/04*
U.S. Cl. 156—64 9 Claims



1. A production quantity adjusting apparatus for corrugators comprising:

at least one set of a light emitter and a light receiver disposed to cross at right angles a conveyor which is disposed on a bridge to retain and feed a single-faced corrugated board so as to detect each of the tops of corrugations in said single-faced corrugated board;

a main processing unit supplied with a specified number of cut pieces Cr, a specified cut length Lr, a preset residual quantity Lrst representing a quantity of said single-faced corrugated board residual between a mill roll and said set of light emitter and receiver, a distance L'rst between said set of light emitter and receiver and a rotary cutter, a count value Ca of pieces cut by said rotary cutter and a count value Cano of rejected pieces to compute the following

$$Cr \times Lr = Ll \text{ (lot length)} \quad (1)$$

said main processing unit being adapted to make computations

according to the following equations each time an output of said set of light emitter and receiver is applied thereto

$$(Ca-Cano)\times Lr=Lla \text{ (finished extent)} \quad (2)$$

$$Le-Lla-Lrst-L'rst=Lrl \text{ (first residual lot length} \quad (3);$$

a pulse generator disposed near said mill roll for feeding the liner of said single-faced corrugated board to count the amount of said liner fed; and

a single-facer command unit for receiving said lot length Ll and said first residual lot length Lrl computed by said main processing unit to count down a newly received value of said Lrl in response to an output of said pulse generator and thereby to control the amount of said liner fed.

4,284,446

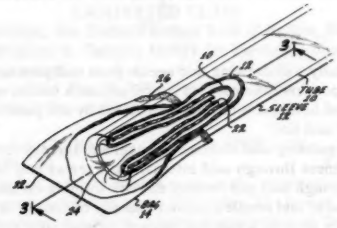
CULTURE SAMPLING DEVICE

Robert F. Bader, 1269 N. Clark St., Los Angeles, Calif. 90069

Division of Ser. No. 23,790, Mar. 26, 1979. This application Feb. 11, 1980, Ser. No. 120,503

Int. Cl.³ B29C *27/14;* **A61B** *10/00;* **B32B** *1/08*

U.S. Cl. 156—69 **10 Claims**



1. A method of forming a culture sampling device of the type including a relatively flexible tube, a sleeve of pliant waterproof material surrounding the tube, the sleeve having a proximal end and having a distal end tucked into the distal end of the tube, and including a bag of pliant waterproof material enclosing the distal end of the tube and bonded to the outside surface of the sleeve to form a waterproof seal extending all around the sleeve, said method comprising the steps of:

(1) bonding flaps to the outside surface of the sleeve along a line located a specified distance from the distal end of the sleeve, said line extending all around the sleeve;

(2) positioning the tube within the sleeve with the distal end of the tube nearer the distal end of the sleeve;

(3) tucking a portion of the sleeve adjacent the distal end of the sleeve into the distal end of the tube; and

(4) bonding the flaps together so that together the flaps form a waterproof bag enclosing the distal end of the tube.

4,284,447

METHOD OF MANUFACTURING A COMPOSITE PANEL

Luther I. Dickens, 310 3rd St., Radford, Va. 24141, and William C. Nanny, 550 Battery St., San Francisco, Calif. 94111

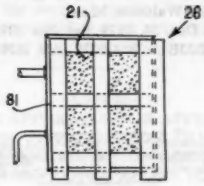
Division of Ser. No. 659,758, Feb. 20, 1976, abandoned. This application May 18, 1979, Ser. No. 40,192

Int. Cl.³ B29D *27/00*

U.S. Cl. 156—78 **9 Claims**

1. A method of manufacturing a composite panel comprising the steps of

heating a heat expandable plastic material in particular form in a separable closed mold to expand the material into a panel core having the shape of the mold cavity, and adhering thin reinforcing strips in spaced apart relation to the front and back surfaces of the expanded core while the



core is heated with the ends of predetermined strips extending from edges of the core.

4,284,448

METHOD AND AN ARRANGEMENT FOR THE MANUFACTURE OF CASINGS

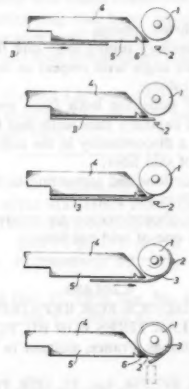
Herwig Pupp; Otto B. Andersson, both of Lund, and Jan-Erik Nilsson, Staffanstorp, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Dec. 26, 1978, Ser. No. 972,802

Claims priority, application Sweden, Dec. 23, 1977, 7714734

Int. Cl.³ B29C *27/00, 17/04;* **B29D** *23/00;* **B29C** *29/00*

U.S. Cl. 156—86 **10 Claims**



1. In a method for the manufacture of casings of thermoplastic, heat-shrinkable material including the steps of winding a sheet of thermoplastic, heat-shrinkable material around a forming tool and joining the ends of the sheet together, the improvement comprising the steps of:

preheating substantially the whole length of at least the side of the sheet facing the forming tool to a temperature which is substantially equal to the softening temperature of the sheet;

heating, while keeping the sheet at rest, only said side of the sheet adjacent the front end of the sheet to a temperature which exceeds that at which shrinkage is initiated so that said front end of said sheet shrinks and assumes a curved shape; and

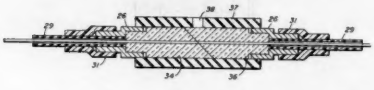
advancing said sheet into engagement with said forming tool with said side supported on the surface of said tool.

4,284,449

METHOD FOR PRODUCING AN OPTICAL POWER SAMPLING DEVICE

Samuel M. Stone, Lynnfield, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 26, 1979, Ser. No. 107,998
Int. Cl.³ B32B *1/08;* **G02B** *5/14;* **B29D** *11/00*
U.S. Cl. 156—86 **22 Claims**



1. A method for providing a device for sampling optical power carried along a transmission medium comprising:

a. cutting capillary tubing to a convenient length, consistent with obtaining good alignment in a V-block;

b. machining the outside diameter of the cut capillary tubing to a uniform diameter over its length, then machining the ends of said tubing to a smaller diameter to accommodate end caps, maintaining the axis of the generated cylinders essentially coaxial with the axis of the bore;

c. polishing a portion of said cylinder;

d. inserting a length of optical fiber into said cut capillary tubing;

e. cementing said fiber into said cut tubing;

f. cementing end caps, each having an orifice for the passage of said optical fiber therethrough, to ends of said cut tubing;

g. slipping protective sleeving over said optical fiber so that said sleeving is inserted within said orifices of said end caps;

h. cementing said protective sleeving to said end caps;

i. applying shrink tubing over said end caps and protective sleeving;

k. heating said shrink tubing;

l. cutting said capillary tubing with said fiber into two sections at an acute angle with respect to the principal axis of said capillary tubing;

m. grinding and polishing both faces resulting from said cutting of said capillary tube with said fiber;

n. providing for a discontinuity in the index of refraction at the cut faces of said fiber;

o. aligning said sections and cementing said sections in alignment with each other; and

p. positioning a photodetector to receive optical power reflected from one of said cut faces.

4,284,450

METHOD AND DEVICE FOR REPAIRING TUBELESS TUBULAR TIRES FOR BICYCLES

Jean Duttlinger, Soissons, France, assignor to Wolber, Soissons, France

Division of Ser. No. 897,774, Apr. 19, 1978, Pat. No. 4,200,009. This application Dec. 11, 1979, Ser. No. 102,526
Claims priority, application France, May 13, 1977, 77 14680
Int. Cl.³ B60C *21/00*
U.S. Cl. 156—97 **6 Claims**

1. A method for repairing a puncture hole in a tubeless tubular tire and a tubeless cover, said method comprising:

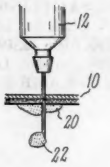
providing an elongate hollow injection needle having a first end connectable to a source of cement and a second end adapted to be inserted through saisd puncture hole in said tire, said needle having extending therethrough, throughout the entire length thereof from said first end thereof to said second end thereof, an internal hollow passageway through which cement from the source may be supplied, said needle having at a position intermediate said first and second ends thereof at least one lateral orifice extending through said needle from said internal passageway thereof to the outer surface thereof, and said needle having an end orifice extending through said needle from said internal passageway thereof to the extremity of said second end thereof;

connecting a source of cement to said first end of said needle;

inserting said needle through said puncture hole in said tire to a position such that said lateral orifice is inwardly spaced from the inner surface of said tire;

inclining said needle with respect to a radial line through said puncture hole, thereby bringing said lateral orifice to a position adjacent said inner surface of said tire;

manipulating said source of cement and thereby forcing said cement through said internal passageway and outwardly through said lateral orifice onto said inner surface of said tire, while rotating said needle about the axis of said puncture hole, and thereby depositing on said inner surface of said tire a first quantity of cement in the form of an annular patch surrounding said puncture hole;



partially withdrawing said needle from said puncture hole to a position whereat said lateral orifice is within said puncture hole and is blocked and sealed by the puncture edges of said tire;

manipulating said source of cement and thereby forcing said cement through said internal passageway and outwardly through said end orifice, thereby forming on said second end of said needle a second quantity of cement in the form of a drop at a position aligned substantially centrally of said puncture hole; and

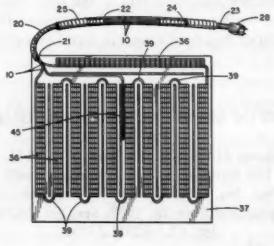
completely withdrawing said needle from said puncture hole, and thereby depositing said drop of cement centrally of said puncture hole and causing said drop to join with the center of said annular patch of cement, to thus form on said inner surface of said tire a relatively wide deposit of cement centered on and sealing said puncture hole.

4,284,451

TIRE REPAIR METHOD AND APPARATUS

Glenn R. Conley, 250 E. Wood St., New Lenox, Ill. 60451

Filed Feb. 4, 1980, Ser. No. 118,177
Int. Cl.³ B29H *5/17*
U.S. Cl. 156—97 **3 Claims**



1. Tire repair apparatus, comprising a first flexible heating pad for placement against a patch on the concave inner surface of a section of tire casing to be repaired, a first flexible inflatable member for insertion into said tire casing to hold said first flexible heating pad against said patch when said first flexible

inflatable member is inflated, a second flexible heating pad for placement against the outer surface of said section of tire casing to be repaired, a second flexible inflatable member for placement against said second flexible heating pad to hold said second flexible heating pad against said outer surface of said section of tire casing when said second flexible inflatable member is inflated, and securing means to retain said second flexible inflatable member in place against said second flexible heating pad to expand thereagainst as said second inflatable member is inflated, wherein said first flexible heating pad includes a holder of flexible sheet material, a plurality of elongated pockets in said holder in closely spaced apart relationship, a strip of electrical heating tape in each of said elongated pockets, connecting conductors to loosely connect said strips of elongated heating tape having width and length dimensions corresponding to those of said elongated pockets but being sufficiently smaller to permit free floating lateral and longitudinal movement of said strips within said pockets relative to each other and relative to said pockets when said first flexible heating pad is being forced against said concave inner surface of said tire casing by inflation of said first flexible inflatable member thereby avoiding buckling and creasing of said flexible heating pad as it is pressed against said concave inner surface.

4,284,452

METHOD OF EMBEDDING THIN WIRES IN LAMINATED GLASS

Walther Bethge, and Dietrich Bethge, both of Riehen, Switzerland, assignors to Therglas GmbH fur Flachenheizung, Riehen, Switzerland

Filed Jan. 31, 1980, Ser. No. 117,280

Claims priority, application Switzerland, Feb. 12, 1979, 1316/79

Int. Cl.³ B32B *17/12, 31/00;* **H05B** *3/06*

U.S. Cl. 156—99 **5 Claims**

1. Method of embedding thin wires in the intermediate film of transparent laminated glass, preferably for heated panes, characterized in that plastic filaments consisting of the same base material as the intermediate film and having wire wound around them in stretched helical coil configuration are pressed into the film contained a larger amount of plasticizer than the filaments, and made to disappear during the pressing procedure to form the laminate by diffusion of the plasticizer in the intermediate film into the filaments.

4,284,453

METHOD OF IMPARTING COLOR HIGHLIGHTS OR SHADOWS TO A TEXTURED DECORATIVE LAMINATE

Gilbert D. Endrizzi, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Continuation-in-part of Ser. No. 868,718, Jan. 11, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,402

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—154 **8 Claims**

7. Method of imparting highlights or shadows to a decorative laminate comprising the steps of preparing a textured decorative laminate by compression molding utilizing a pigmented release sheet to cause transfer of pigment to said laminate, and then rubbing the surface of the pigmented textured laminate to the extent necessary to remove some of the applied pigment, with more pigment being removed from the raised areas of the textured laminate than the depressed areas thereof.

8. In conjunction with the production of a decorative laminate having a textured outer surface wherein the laminate is formed by making an assembly comprising resin impregnated sheets, applying a release sheet over an outer surface of said assembly, and forming a laminate by heating and compressing said assembly between a pair of molding cauls, wherein one of said cauls has a textured surface facing said release sheet and serving to impart a textured finish to said outer surface, a method of imparting color highlights to the outer textured surface of said laminate, said method comprising the steps of providing said release sheet with a pigment coating facing said outer surface such that pigment is transferred from said release sheet to said outer surface during said heating and compressing step and while texture is being imparted to said outer surface, and upon formation of said laminate, removing the release sheet to expose the outer pigmented, textured surface, and rubbing said textured surface such that pigment is removed more from the raised areas than the depressed areas thereof.

4,284,454

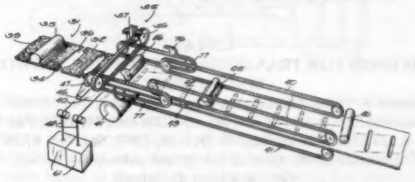
METHOD AND APPARATUS FOR APPLYING ELASTIC BANDS TRANSVERSELY TO A DIAPER LINE

Curt G. Joa, P.O. Box 1121, Boynton Beach, Fla. 33435

Filed May 12, 1980, Ser. No. 147,996

Int. Cl.³ B32B *31/10*

U.S. Cl. 156—163 **12 Claims**



1. A method of attaching elastic bands to flexible absorbent articles such as diapers comprising the steps of forming the articles in a continuous web comprising the articles which web extends longitudinally and is travelling longitudinally along a fabrication line and the length of the individual articles in the line is transverse to the longitudinally extending web, stretching elastic bands in a direction such that the longitudinal axes of the bands are transverse to the longitudinal travel direction of the web, attaching said bands to the web in their stretched condition and maintaining said bands in stretched condition transversely to the web until fabrication of the article in the web is completed and then allowing the bands to contract and pleat the article.

2. The method of claim 1 in which said elastic bands are cut to predetermined lengths after they are stretched and before applying them to the web.

4,284,455

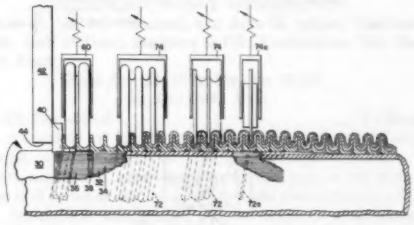
APPARATUS AND METHOD FOR GENERATING A CONTINUOUSLY-FORMED MANDREL AS A SUPPORTIVE BASE

Thomas J. Morin, 19 Nonotuck Rd., West Springfield, Mass. 01089

Filed Oct. 15, 1979, Ser. No. 85,010

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—190 **34 Claims**



1. A method for generating a continuously-formed mandrel as a supportive base in the building of a tubing therearound comprising the steps of:

feeding a profiled workpiece in ribbon form to and through a stationary force generating helix,

deflecting the workpiece passed from the helix by an initial pressure means into a spiralled configuration around a rotative serrated forming mandrel,

impinging the workpiece into the serrations of the forming mandrel for the formation of teeth in the workpiece as the workpiece develops as a formed mandrel,

maintaining intimate mating contact between the teeth of the workpiece and the serrations of the forming mandrel only at the point of pressure of the initial pressure means,

progressing the formed mandrel longitudinally of the forming mandrel under the force generated by the helix in the exploitation of the clearance between formed mandrel and forming mandrel for facilitating the longitudinal translation,

enwrapping a tape in a layer configuration exteriorly of and around the formed mandrel in the buildup of a tubing,

and removing the formed mandrel from interiorly of a finally self-sustaining tubing.

4,284,456

METHOD FOR TRANSFERRING CREATIVE ARTWORK ONTO FABRIC

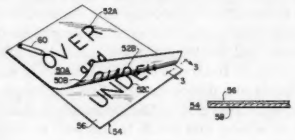
Donald S. Hare, 4 Lexington Ave., New York, N.Y. 10010

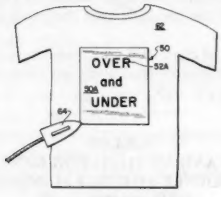
Continuation-in-part of Ser. No. 954,228, Oct. 24, 1979, Pat. No. 4,224,358. This application Oct. 24, 1979, Ser. No. 87,767

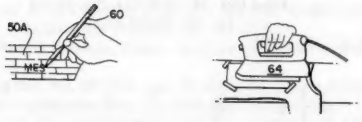
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

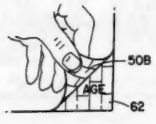
Int. Cl.[3] **B44C** *31/00;* **B41C** *3/12;* **B21C** *1/00*

U.S. Cl. 156—234 **2 Claims**









1. A method of transfering a hand-formed design and a pre-printed background pattern from a transfer sheet to a fabric, comprising the steps of:

generating said design on the obverse surface of a transfer sheet by the application of energy thereto, while juxtaposing the rear surface of said transfer sheet with a layer of energy transferable material to provide a transferable mirror image of said design on the said rear surface, said transfer sheet including a pre-printed background pattern and said design being generated by creating said design by hand to apply said energy to said obverse surface, said pre-printed background pattern being formed of energy transferable material on the rear surface of said transfer sheet and being used as a guide with respect to which said design is created;

placing said rear surface containing said background pattern and said transferable mirror image of said design contiguous with a desired position on a surface of said fabric by visually aligning said design on said obverse surface with said desired position; and

applying energy throughout the obverse surface of said transfer sheet to transfer both said mirror image of said design and said background pattern from said rear surface to said desired area on said fabric to thereby reproduce said design superimposed on said background pattern on said fabric.

4,284,457

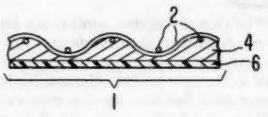
METHOD FOR BONDING A SKIN MEMBER TO HONEYCOMB CORE

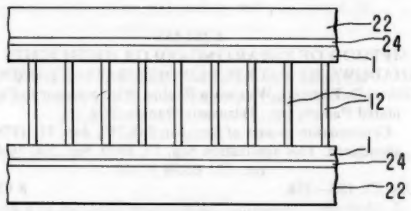
Roger A. Stonier, San Jose, and Richard A. Hayes, Foster City, both of Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

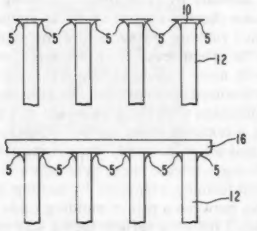
Filed Jul. 30, 1979, Ser. No. 61,962

Int. Cl.[3] **B05D** *5/10;* **B29C** *31/00;* **B65C** *9/25;* **B32B** *31/00*

U.S. Cl. 156—237 **9 Claims**







1. Method for bonding a skin member to a honeycomb having a faying surface delineating a piecewise demarcated open space, comprising:

applying an adhesive-coated fabric against the faying surface of the honeycomb;

heating the fabric covered honeycomb so that some of said adhesive flows out of said fabric and into said honeycomb at a region near said surface in such a way that only part of the open space along the faying surface is covered with adhesive;

cooling said heated honeycomb so that the adhesive on said fabric becomes brittle;

peeling said fabric away from said honeycomb so that the only substance remaining adhered to said honeycomb is said flowed adhesive;

placing said skin member against said surface; and

imparting a final cure to said adhesive.

4,284,458

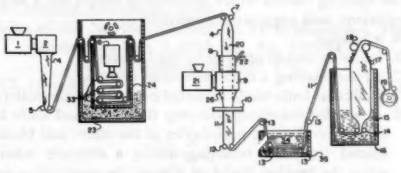
METHOD FOR PRODUCING LAMINATED FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 818,772, Jul. 25, 1977, abandoned, which is a continuation of Ser. No. 514,691, Oct. 15, 1974, abandoned, which is a continuation of Ser. No. 136,613, Apr. 22, 1971, abandoned, which is a division of Ser. No. 659,940, Aug. 11, 1967, Pat. No. 3,607,505. This application Jun. 25, 1979, Ser. No. 51,782

Int. Cl.³ B29D *23/04*

U.S. Cl. 156—244.12 **1 Claim**



1. In the process for the manufacture of a tubular, laminated film consisting of extruded thermoplastic materials, the improvement which comprises:

(a) providing an unoriented, tubular, collapsible, thermoplastic substrate which has been extruded and cooled below its melt temperature;

(b) inflating the substrate into an approximately circular cross-section subsequent to said extrusion and cooling thereof, the inflation alone of the tubular substrate providing said circular cross-section and, after inflation, said tubular substrate having no internal, mechanical supporting means and said tubular substrate not being substantially expanded by said inflation;

(c) providing a circular laminating die;

(d) passing said inflated tubular substrate through said die;

(e) trapping the portion of said inflated, tubular substrate that passes through said die between two spaced apart pairs of pinch rollers; and,

(f) extruding a molten coating layer of thermoplastic material onto and uniformly around said inflated, tubular substrate thereby producing a laminated tubular film product which is substantially unstretched and is flexible and collapsible.

4,284,459

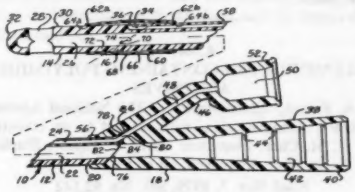
METHOD FOR MAKING A MOLDED CATHETER

Bhupendra C. Patel, Elgin; Russell J. Schweizer, Crystal Lake, both of Ill., and Jesse C. Smith, St. Petersburg Beach, Fla., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 921,696, Jul. 3, 1978, Pat. No. 4,207,900. This application Jan. 28, 1980, Ser. No. 115,842

Int. Cl.³ B29C *27/00;* **B29D** *23/02;* **B29G** *3/08*

U.S. Cl. 156—245 **17 Claims**



1. In a method of making a catheter, comprising the steps of:

severing a proximal end of a catheter shaft and forming a taper in the proximal end of the catheter shaft;

inserting a distal end of a main pin into a proximal end of a main lumen in the catheter shaft and closing the proximal end of the main lumen with the main pin;

inserting said distal end of an auxiliary pin into a proximal end of an inflation lumen in a wall of the shaft and closing the proximal end of the inflation lumen with the auxiliary pin;

placing the proximal end of the catheter shaft and said main and auxiliary pins into a mold cavity with a core portion of the main pin and an elongated proximal portion of the auxiliary pin being spaced from walls of the mold, and with a proximal end portion of the catheter shaft containing the proximal end of the drainage lumen being outwardly flared in the mold;

injecting a molten material into the cavity to mold a connecter directly onto the proximal end of the shaft;

removing the main pin through an opening formed by the main pin at the proximal end of the connecter with said core portion forming a lumen in the connecter communicating with the main lumen of the shaft; and

removing the auxiliary pin through an opening formed by the auxiliary pin at a proximal portion of the connecter, with the auxiliary pin forming an inflation lumen in the connecter, and with said proximal end portion of the shaft defining a curved portion of the shaft inflation lumen communicating between the shaft and connecter inflation lumens.

4,284,460

HEAT SEALING UNTREATED SULFONAMIDE-TYPE CATION EXCHANGE MEMBRANES

Sanders H. Moore, Cleveland, and John O. Adams, Madisonville, both of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 30, 1979, Ser. No. 34,317

Int. Cl.³ C09J *5/00*

U.S. Cl. 156—306.6 **9 Claims**

1. A method of joining two sheets of a cation exchange material, which material has not been treated with either a tertiary amine or a quaternary ammonium base or the salt of either said amine or said base, each of said sheets having a first side, which first side has an external layer of a sulfonated perfluorovinyl ether polymer having pendant sulfonamide cation exchange groups, which consists essentially of the steps of:

(a) placing said sheets in a position with said first sides facing each other;

(b) placing a layer of a sulfonated perfluorovinyl ether polymer having terminal sulfonyl groups in the form —SO_3H

on both sides thereof between said first sides of said sheets, wherein said sides have not been treated with either a tertiary amine or a quaternary ammonium base or the salt of either said amine or said base; and

(c) heat sealing said layer to each of said first sides at a pressure within the range of from about 1 to about 5 kg/cm^2 and a temperature within the range of from about 260° C. to about 350° C. for a time within the range of from about 3.5 to about 7.5 seconds to thereby join said first sides.

4,284,461

ALUMINUM ION-CONTAINING POLYIMIDE ADHESIVES

Robert A. Frosch, Administrator of The National Aeronautics and Space Administration, with respect to an invention of Anne K. St. Clair, Poquoson; Larry T. Taylor, Blacksburg; Terry L. St. Clair, Poquoson, all of Va.

Filed Nov. 7, 1979, Ser. No. 92,142
Int. Cl.³ C08G *69/28*
U.S. Cl. 156—331.5 **6 Claims**

1. A method for preparing an aluminun ion-containing polyimide adhesive solution which comprises:

reacting an aromatic dianhydride with an equimolar quantity of a meta-oriented aromatic diamine followed by the addition of 2–3 percent by weight of an aluminum ion-containing metal complex;

the dianhydride and diamine reactants being previously dissolved in a solvent or mixture of solvents, at least one of which is selected from the group consisting of,

1,2-dimethoxyethane,

bis(2-methoxyethyl)-ether,

1,2-bis(2-methoxyethoxy)ethane, and

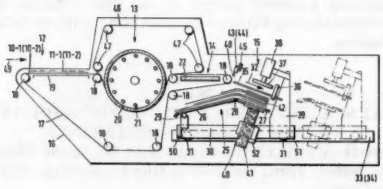
bis-[2-(2-methoxyethoxy)-ethyl]ether.

4,284,462

AUTOMATIC STACKING APPARATUS FOR VARIABLE LENGTH TEXTILE FABRICS

Rolf Heine, Rinteln, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH. & Co., Vlotho, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,178
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856237
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—350 **9 Claims**



1. An apparatus for gluing and stacking textile fabric pieces, comprising:

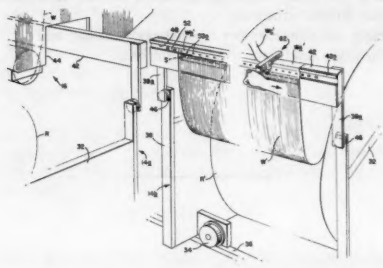
a feeding station, a hot pressing station, a cooling station and an automatic stacking device for stacking together the glued textile fabrics, said stacking device including a stacking table having a stacking plate and being reciprocally movable and adjustable in height, a height adjustable clamping plate disposed above said stacking table and being reciprocally movable with said table, said clamping plate being raised to allow a textile fabric piece to be delivered to said stacking table, and being lowered to clamp a leading edge of said textile fabric piece on a front portion of said table, whereby a plurality of textile fabric pieces may be stacked, each of the leading edges of said pieces being clamped, one on top of the other, by said clamping plate.

4,284,463

WEB PREPARATION APPARATUS

Albert L. H. Wright, Sherborn, Mass., assignor to Butler Greenwich Inc., Greenwich, Conn.

Filed Mar. 16, 1979, Ser. No. 21,211
Int. Cl.³ B31F *5/00*; B65H *69/06*
U.S. Cl. 156—502 **15 Claims**



1. In a splicer of the type having a splicing station, a web preparation station and a web positioning bar movable between the two stations, web preparation apparatus comprising

A. a series of projections spaced alone the length of the positioning bar at one face thereof, and

B. a tool engageable against the positioning bar after the leading end segment of a ready web is draped over the bar, said tool having means for pressing the draped web segment against said face of the bar so that said web segment becomes impaled on said projections thereby removably securing said web segment to said bar.

15. Web preparation apparatus for use in a splicer having a splicing station and elongated web positioning means located at the splicing station which positioning means has a series of projections, said apparatus comprising

A. a bracket,

B. retaining means secured to the bracket,

C. a roller having a circumferential groove,

D. a circular knife blade mounted coaxially to the roller, and

E. means for rotatively securing the roller and knife blade bracket so that the peripheries of the roller and blade are spaced from the retaining means a distance whereby, when the bracket is placed against the positioning means with the roller, and blade and the retaining means engaging opposite surfaces of the positioning means and the bracket is drawn lengthwise along the positioning means, said roller presses a web end segment located at the positioning means onto said projections, said projections being received in the groove in said roller, while said knife blade trims off the leading edge of said web.

4,284,464

APPARATUS FOR MAKING CORNER JOINTS OF SEALING PROFILES FOR WINDOWS, DOORS OR THE LIKE

Arthur Förster, Munich, Fed. Rep. of Germany, assignor to Deventer GmbH & Co., Munich, Fed. Rep. of Germany

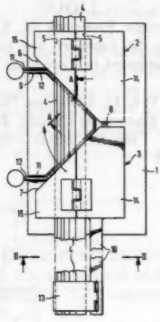
Filed Sep. 5, 1980, Ser. No. 184,247
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 8000905[U]
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—510 **18 Claims**

1. Apparatus for making corner joints from lengths of profiles of plastic material comprising:

a base,

a pair of profile holding means on said base, one of said profile holding means being pivotally mounted relative to

said base, said pair of profile holding means when aligned holding a continuous length of the profile which extends into both said holding means, each of said profile means having an oppositely angled side across which the profile extends such that when the two profile holding means are aligned a section is formed which has an included angle between said sides which opens towards the front faces of said pair of profile holding means, and



heat welding means including a blade which fits within the angled sides between the two profile holding means to cut the profile extending into said section and to heat the edges of the pieces of profile remaining in each of said holding means,

the pivoting of said one profile holding means bringing the heated edges of said profile pieces into contact to weld said pieces and hold the same together.

4,284,465

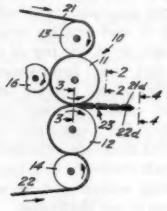
APPARATUS FOR THE MANUFACTURE OF FIBROUS SHEET STRUCTURE

Lawrence A. Walbrun, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 950,076, Oct. 10, 1978, abandoned. This application Dec. 7, 1979, Ser. No. 101,994

Int. Cl.³ B30B *3/00*; B31F *1/10*

U.S. Cl. 156—513 **3 Claims**



1. An apparatus for the fabrication of a multi-ply fibrous sheet structure, comprising: a first pair of embossing rolls of substantially rigid material including matched patterns having recessed sections and continuous linear, radially outwardly presented land regions disposed thereabout; a plurality of radially outwardly presented, sharp protuberances in said recessed sections; means mounting said first pair of embossing rolls for rotation about parallel axes and in tangential, nip forming engagement with one another; a second pair of embossing rolls of substantially flexible and resilient material mounted for rotation about axes parallel with the recited axes of said first pair of embossing rolls, and disposed in forcible, tangential, nip-forming engagement therewith; means for feeding a pair of fibrous webs through said nips between said first and second pair of embossing rolls so that said webs are resiliently urged by said second pair of rolls into engagement with the pattern on said first pair of rolls, engagement with said land regions being effective to form flat continuous linear sections, and engagement with said protuberances and recessed regions being effective to form pocket portions and perforations therein surrounded by fibers presented inwardly of said pocket portions; means for applying adhesive to the linear section of at least one of said webs; and said first pair of rolls being operable upon rotation thereof to convey said webs through the recited nip thereof for adherence of said flat regions of the webs in formation of the recited multi-ply sheet, and for removal of the latter from said nip.

4,284,466

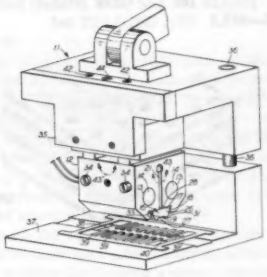
BONDING HEAD

George A. Chayka, and Fred J. Schneider, both of Northampton, Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,242

Int. Cl.³ B30B *15/02*, *15/34*

U.S. Cl. 156—583.1 **3 Claims**



1. A thermocompression bonding head for bonding electrical component parts, which comprises:

a thermode including a body having at least one cavity for mounting a heating element, a dovetailed groove extending in the body adjacent to said cavity, said dovetailed groove being formed by two opposite, inwardly diverging sidewalls intersecting a flat reference surface, said reference surface being parted by a slot extending into said body to a depth sufficient for resiliently hinging the portion of said body on one side of said slot with respect to the portion of said body on the other side of said slot; and

a bonding element having a base reference surface, inwardly sloping sidewalls adjoining said base reference surface at two parallel edges thereof and a bonding end having at least one bonding rail extending parallel to said parallel edges, said bonding element being insertable into said groove upon a resilient expansion of said sidewalls of said groove with respect to each other, such that, upon said bonding element being inserted within said groove, said base reference surface is adjacent to said reference surface of said groove, said bonding end protrudes from said groove, the sidewalls of the groove resiliently bear on the sidewalls of the bonding element, and the reference surface on the thermode and the base reference surface of the bonding element are located in mutual, intimate, heat conducting contact.

4,284,467
METHOD FOR MAKING SEMICONDUCTOR MATERIAL

Egon E. Loebner, Palo Alto, and Paul E. Greene, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 226,351, Feb. 14, 1972, abandoned, which is a continuation of Ser. No. 832,276, Jun. 11, 1969, abandoned. This application Nov. 13, 1975, Ser. No. 631,576

Int. Cl.[2] B01J *17/26*

U.S. Cl. 156—613 **7 Claims**

1. A method of producing a semiconductor material, said method being characterized by the step of:

epitaxially growing a semiconductor compound alloy having at least three components on a substrate by initially growing a composition of said semiconductor alloy having a lattice constant substantially equal to the lattice constant of the substrate, and subsequently varying the relative proportions of said at least three components to substantially follow an isolattice compositional locus of the semiconductor compound alloy to a desired final composition.

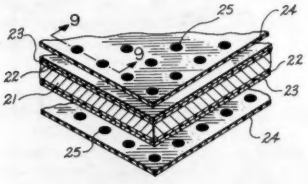
4,284,468
PATTERNED CHEMICAL ETCHING OF HIGH TEMPERATURE RESISTANT METALS

Llewelyn Stearns, 142 Nevada St., El Segundo, Calif. 90245

Continuation of Ser. No. 861,165, Dec. 16, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,496

Int. Cl.[3] C23F *1/02*

U.S. Cl. 156—661.1 **8 Claims**



1. A process for the chemical milling, to a predetermined pattern, of high temperature resistant metal material including those selected from the group consisting of high temperature resistant alloys including combination alloys of two or more of chromium, nickel, molybdenum, cobalt, iron, Niobium, Titanium and Tungsten, and refractory elements which comprises:

coating the exposed surfaces of said metal material with a polymerizable resin composition;

curing said polymerizable resin composition to form a coated metal material that is coated with a layer of cured resin material;

applying a coating of light sensitive photoresist composition upon said coated metal material;

exposing said light-sensitive photoresist composition to a light source in said predetermined pattern;

chemically removing only said photoresist composition in accordance with said predetermined pattern to thereby expose cured resin material in those same areas where said photoresist material has been removed;

chemically removing only said exposed cured resin material without removal of metal or photoresist material to thereby expose metal material in those same areas where said photoresist and resin materials have been previously removed;

chemically etching said exposed metal material in the said predetermined pattern with an etchant selected from the group consisting predominately of aqua regia and aqua regia plus hydrofluoric acid at temperatures of between about 140° F. to 180° F. but without removal of cured resin material by said etchant; and

stripping said photoresist composition and cured resin material to completely expose said metal material etched in said predetermined pattern.

4,284,469
METHOD AND APPARATUS FOR CONCENTRATING A LIQUID

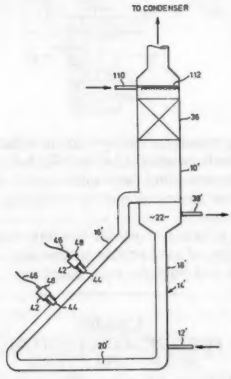
Michio Ikura, Toronto; Frederick W. S. Jones, Campbellville; Harley C. Prime, St. Lambert, and Ian Rodger, Willowdale, all of Canada, assignors to Chemetics International, Vancouver, Canada

Filed Feb. 11, 1980, Ser. No. 120,556

Claims priority, application Canada, Jan. 15, 1980, 343695

Int. Cl.[3] B01D *1/00*

U.S. Cl. 159—28 R **4 Claims**



1. Apparatus for concentrating an aqueous, corrosive, electrically conductive acid, comprising:

(a) an evaporator vessel adapted to contain said acid at a selected level,

(b) a thermosyphon loop connected to said evaporator vessel, said loop having first and second legs each having a top and bottom separated by a substantial vertical distance, the top of said first leg being connected to said vessel below said level, the top of said second leg being connected to said vessel approximately at or below said level, the bottom of said first leg being connected to the bottom of said second leg, said second leg having an orientation which has a substantial vertical component,

(c) a pair of spaced electrode structures located in said second leg and each electrode structure comprising:

(i) a stub conduit extending from said second leg at an angle inclined to the horizontal,

(ii) means defining with the end of said stub conduit remote from said second leg a gas-tight housing,

(iii) an electrode of substantially inert material within said stub conduit, said electrode having a first portion extending into said second leg to contact said acid and a second portion in said housing, said electrode comprising a porous material communicating between the interior of said housing and said second leg,

(iv) a seal encircling said electrode at a position spaced along said stub conduit from said second leg and seating against said stub conduit,

(v) connection means within said housing connected to said second portion of said electrode and being separated by said seal from said first portion of said electrode, said connection means extending through said

housing and being adapted to receive electric power from a power supply,

(d) said electrode structures being spaced substantially below said level,

(e) means for supplying electric power through said connection means to said electrodes at a rate such as to cause boiling of said acid entirely above said electrodes,

(f) means connected to said second leg for supplying a gas thereto at a pressure and flow sufficient to ensure circulation of said acid in said loop when said electric power is supplied to said electrodes and to stabilize said circulation,

(g) said means (f) being connected to each of said housings for pressurizing said housings to thereby force at least some of said gas through each electrode into said second leg whereby to protect said connection means against attack by said acid and to reduce acid attack against said seal.

4,284,470

HIGH-STRENGTH ROOFING PRODUCTS USING NOVEL GLASS FIBER MATS

Alfredo A. Bondoc, Middlesex, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 923,553, Jul. 11, 1978, Pat. No. 4,183,782. This application Sep. 26, 1979, Ser. No. 79,192

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ D21H *1/02, 5/18*

U.S. Cl. 162—123 **25 Claims**

1. A high-strength roofing product comprising:

(A) a glass fiber mat consisting essentially of glass fibers, voids extending through the thickness of said mat and a binder to hold said fibers together, said fibers having a length of about ¼ to 3 inches and a diameter of about 3 to 20 microns, said mat having a thickness of about 0.3 to 3 mm. and a basis weight of about 20 to 200 g./m^2, characterized in that:

(a) at least about 70% by weight of said fibers of substantially the same fiber length, are substantially uniformly enmeshed individual filament fibers,

(b) less than about 20% of the area of said mat are voids which extends through the thickness of the mat, the rest being fibers, and,

(c) at least about 80%, 30% and 10% of said voids have an equivalent diameter which is less than about 50, 10 and 5 microns, respectively, and,

(B) a bituminous material impregnated in said mat.

19. A built up roofing system comprising:

(a) multiple plies of said high-strength built up roofing product as defined in claim **1**, and

(b) adhesive asphaltic coatings between said membranes.

4,284,471

METHOD FOR THE PRODUCTION OF A FIBROUS MAT

Gummar Cederqvist, S Lerdala, Sweden, assignor to Rockwool Aktiebolaget, Skovde, Sweden

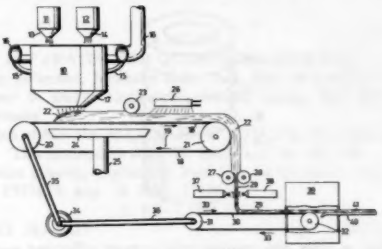
Continuation of Ser. No. 942,698, Sep. 15, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,184

Claims priority, application Sweden, Sep. 28, 1977, 7710857

Int. Cl.³ D21F *11/00*

U.S. Cl. 162—152 **26 Claims**

1. In a method of production of an asbestos-free fibrous mat in which a suspension comprising artificial mineral fibers, cellulosic fibers, and resin binder is dewatered during shaping into mat form on a wire, wherein the dewatered mat is subsequently compressed and dried, the compression being sufficient to cause a substantial reduction in thickness of the mat, the improvement wherein the de-watered mat is partially dried to a dry content of between 60 and 90%, wherein a latex emulsion binder is applied to the partially dried mat, and wherein the latex-bearing partially dried mat is subsequently



further dried to effect final drying, whereby the impression resistance of the mat product is substantially increased.

4,284,472

METHOD FOR ENHANCED CONTROL OF RADIOIODINE IN THE PRODUCTION OF FISSION PRODUCT MOLYBDENUM 99

Raul J. Pomares, Livermore; Carl P. Ruiz, and Douglas H. Simpson, both of Fremont, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 16, 1978, Ser. No. 951,651

Int. Cl.³ G21G *1/06*

U.S. Cl. 176—16 **12 Claims**

1. A method for controlling radioiodine produced by the fission of uranium 235 during the process for the production of molybdenum 99 wherein uranium 235 is alloyed with aluminum forming a target which is irradiated with a neutron flux, for producing molybdenum 99, radioiodine and other fission by-products, the method consisting essentially of the steps of:

(a) dissolving the aluminum-uranium alloyed target containing molybdenum 99, radioiodine and other fission by-products in an aqueous caustic solution;

(b) mixing with the caustic solution an amount of reactive silver sufficient to react with substantially all of the radioiodine present in the solution for forming a silver containing precipitate;

(c) filtering the caustic solution for separating the precipitate, undissolved uranium and insoluble fission by-products from the caustic solution filtrate; and

(d) recovering the solids containing the radioiodine in the form of the silver containing precipitate from the filter.

4,284,473

SUBMERGED ULTRASONIC VIEWER FOR A NUCLEAR REACTOR

Kiyoshi Kasama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 27, 1979, Ser. No. 24,329

Claims priority, application Japan, Mar. 27, 1978, 53-35186

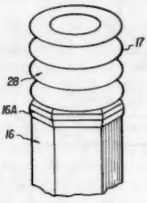
Int. Cl.³ G21C *17/00*

U.S. Cl. 176—19 R **4 Claims**

1. In a viewer for detecting floating core components in a liquid metal coolant of a liquid metal cooled nuclear reactor, said viewer submerged in said coolant and including transducer means for transmitting ultrasonic signals and for receiving reflected ultrasonic signals, driver means coupled to said transducer means for scanning said reactor with said ultrasonic signals, and display means for displaying images corresponding to reflected signals received by said transducer means, the improvement comprising:

said core components each having a rod-like shape defining a longitudinal axis and characterized by polygonal cross-sections in planes perpendicular to said longitudinal axis; and

said rod-like core components provided with a reflecting handling head at one end thereof wherein said reflecting handling head is constructed of varying thickness to define at least one continuously curved reflecting surface around the circumference of said handling head for reflecting ultrasonic signals to said transducer means.

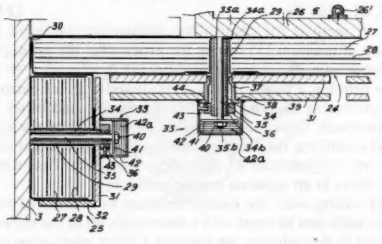


4,284,474

STRUCTURES FOR HEAT INSULATION OF SURFACES WITHIN A NUCLEAR REACTOR

Guy Lemercier, Le Puy Sainte Reparade, France, assignor to Commissariat a l'Energie Atomique, France

Filed Mar. 28, 1979, Ser. No. 24,574
Claims priority, application France, Apr. 7, 1978, 78 10394
Int. Cl.[3] G21C *13/08*
U.S. Cl. 176—38 **5 Claims**



1. An improvement to a structure for heat insulation of surfaces within a nuclear reactor, said structure comprising an assembly of panels each formed by a stack of metal fabric elements applied against the surface to be protected by means of a double fixing system comprising a tubular member extending through a bore of a panel having one end attached to the surface, the opposite end of said tubular member being threaded and adapted to cooperate with a first nut which applies the panel against the surface by means of a bearing plate, and a stud mounted in the axis of the tubular member having one end attached to said surface, the opposite end of said stud being provided with a threaded head which extends beyond the extremity of the tubular member and cooperates with a second nut which supports a washer for preventing the tubular member and the panel from falling in the event of failure of said tubular member, and a protective housing surrounding the end of the head of the axial stud, said housing being rigidly fixed to the first nut.

4,284,475

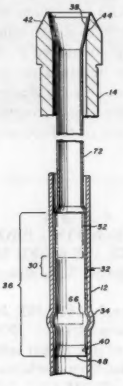
WEAR SLEEVE FOR CONTROL ROD GUIDE TUBE

Andrew J. Anthony, Tarrifville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 26, 1979, Ser. No. 6,605
Int. Cl.[3] G21C *3/30*
U.S. Cl. 176—78 **11 Claims**

1. In a fuel assembly for a nuclear reactor, the reactor having a vertically reciprocable, cylindrical control rod driven from above the reactor core, the combination comprising:

a metal guide tube for telescopingly receiving the control rod and for containing an upward flow of cooling liquid therein, the tube including stop means internal to the tube at the upper end thereof, wherein the portion of the tube facing the control rod tip when the control rod is in the withdrawn position is a critical region which may be subject to wear; and



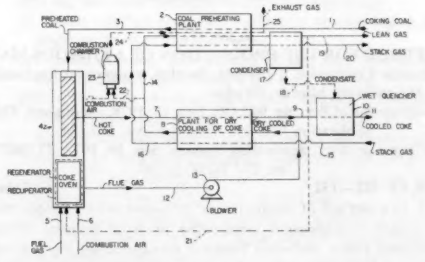
a wear sleeve suspended from the stop means and extending downward through the tube below the critical region, the sleeve being made of a thin-walled, ductile metal having an inner diameter larger than the control rod outer diameter, a portion of the sleeve below the critical region being permanently outwardly deformed into interference engagement with the tube whereby longitudinal movement of the sleeve relative to the tube due to the coolant flow is prevented.

4,284,476

PROCESS AND APPARATUS FOR UTILIZATION OF THE SENSIBLE HEAT OF HOT COKE FOR DRYING AND PREHEATING COKING COAL

Dietrich Wagener; Claus Flockenhaus, both of Essen, and Joachim F. Meckel, Heiligenhaus, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 927,039, Jul. 24, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,475
Int. Cl.[3] C10B *39/02, 39/04, 5/00*
U.S. Cl. 201—39 **8 Claims**



1. A process for dry cooling hot coke after its discharge from a coke oven battery and for drying and preheating moist coking coal prior to its introduction into said coke oven battery to be formed therein into coke, said process comprising:

withdrawing stack gas from a metallurgical installation adjacent to a coke oven battery and directly passing said stack gas through a coke dry cooling plant containing hot coke and therein directly contacting said stack gas with said hot coke and dry cooling said hot coke to form dry cooled coke while simultaneously increasing the temperature of said stack gas;

then passing said stack gas through a coal preheating plant containing moist coking coal and therein directly contacting said stack gas with said moist coking coal and drying and preheating said moist coking coal by transfer of heat thereto from said stack gas; and

maintaining said stack gas in an open system by passing given said stack gas only once through said coke dry cooling plant and said coal preheating plant and not continuously circulating such given stack gas therethrough.

4,284,477

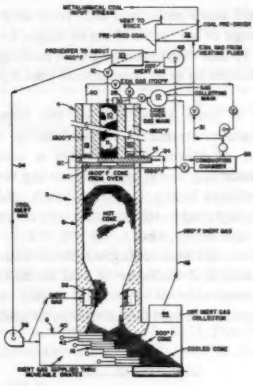
COKING APPARATUS FOR PRODUCING COKE

Vaughn Mansfield, Gallatin, Tenn., assignor to Mansfield Carbon Products, Inc., Nashville, Tenn.

Continuation of Ser. No. 919,299, Jun. 26, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,294

Int. Cl.³ C10B *1/04, 29/04, 37/04, 39/02*

U.S. Cl. 202—110 **2 Claims**



1. Apparatus for coking coal comprising:

a plurality of adjacent vertically elongate side-by-side pockets each defined between spaced parallel vertically elongate fixed side walls and a vertically elongate fixed end wall rigidly affixed between said side walls and defining therewith a substantially U-shaped fixed wall structure, and a movable vertically elongate end wall spaced oppositely from and parallel to the fixed end wall and extending across the mouth of the U formed by the fixed side and end walls wherein each pocket, save the endmost ones, shares a common fixed side wall with adjacent pockets;

each of said pockets having at a lower end thereof individual gate means for opening and closing the same;

means for charging coal into said pockets via the upper ends thereof;

gas passage means extending vertically through said side and end walls;

means for feeding hot combustion gases through said passages for heating the coal in said pockets to coking temperatures;

individual means respectively associated with each of said movable end walls for moving the same towards and away from the opposite end walls whereby to selectively maintain the coal in said pockets under compression and to release the same from compression; and

shaft furnace means disposed beneath and common to said plurality of said pockets for receiving coke discharged through the lower end thereof.

4,284,478

APPARATUS FOR QUENCHING HOT COKE

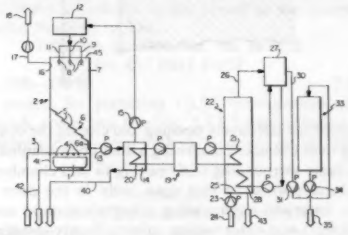
Walter Brömmel, Mülheim-Ruhr, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Division of Ser. No. 952,135, Oct. 17, 1978, Pat. No. 4,246,072. This application Aug. 22, 1980, Ser. No. 181,398

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737624; Aug. 19, 1977, 2737625

Int. Cl.³ C10B *39/08*

U.S. Cl. 202—227 **10 Claims**



1. An apparatus for quenching hot coke produced in a coke plant, said apparatus comprising:

a quenching tower having an interior including an upper portion which is completely sealed from the exterior surrounding environment and a lower portion, said quenching tower having at least one opening means for introducing a charge of hot coke from a coke plant into said lower portion of the interior of said quenching tower, and means for selectively closing said opening means and for thereby completely sealing said lower portion of the interior of said quenching tower from the exterior surrounding environment;

means for supplying quenching water into said lower portion of the interior of said quenching tower and onto a charge of hot coke positioned therein and for thereby cooling said hot coke and generating steam and quenching gases, which then rise to said upper portion of the interior of said quenching tower;

means for supplying condensing water into said upper portion of the interior of said quenching tower and for thereby condensing said steam to form quenching water condensate;

means, positioned at a midportion of the interior of said quenching tower, for collecting a water mixture of said condensing water and said quenching water condensate, while preventing said water mixture from passing to said lower portion of the interior of said quenching tower, and for allowing the upward passage therethrough of said steam and quenching gases rising from said lower portion to said upper portion of the interior of said quenching tower;

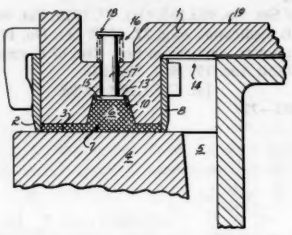
means for discharging the thus collected water mixture from the interior of said quenching tower; and

means for removing said quenching gases remaining in said upper portion of the interior of said quenching tower, after condensing of said steam, from the interior of said quenching tower without directly discharging said quenching gases into the exterior surrounding environment.

4,284,479
SEALING ARRANGEMENT FOR THE OVEN CHAMBER DOOR ON A COKING OVEN

Egon Schulte, Kirchhellen, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,970
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2852013
Int. Cl.[3] C10B *25/16*
U.S. Cl. 202—248 10 Claims

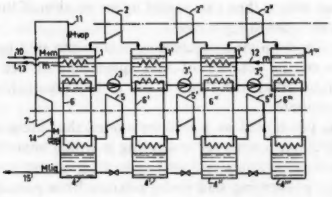


1. A door for selectively opening and closing the opening to a coking over chamber comprising a door body adapted to face a door frame surrounding said opening to said chamber about a peripheral portion of said door body in the door closed position, inner and outer sealing strips mounted on said door body, at least said outer sealing strip resiliently engaging said door frame when said door is closed, said inner and outer sealing strips, said door frame and said facing peripheral portion of said door body defining therebetween a channel, and means for injecting a sealing substance into said channel while said door body is in said door closed position to provide a seal between said door body and said door frame.

4,284,480
METHOD FOR THE CONCENTRATION OF SOLUTIONS

Jacques Sterlini, Paris, France, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Oct. 18, 1979, Ser. No. 85,868
Claims priority, application France, Oct. 18, 1978, 78 29689
Int. Cl.[3] B01D *1/28, 3/02*
U.S. Cl. 203—24 4 Claims



1. A method for the concentration of a dissolved material from a solution of said dissolved material and a solvent, said method comprising:

providing a first set of stages with exchange cells each having liquid and vapor sides, said exchange cells serially connected at said vapor side by turbines and at said liquid side by conduits including pumps

providing a second set of stages with exchange cells each having liquid and vapor sides, said exchange cells being serially connected at said vapor sides by compressors and at said liquid sides by conduits including calibrated orifices;

introducing as a working fluid a flow of dilute solution into a first endstage of said first set of stages;

utilizing only work generated heat from a corresponding stage of said second set of stages to ebullate a portion of said dilute solution by indirect heat exchange;

utilizing said pumps to transfer at least a portion of the remaining solution to succeeding stages of said first set of stages and towards a second endstage;

utilizing only work generated heat from the corresponding stages of said second set of stages to ebullate a portion of said dilute solution in said succeeding ones of said first set of stages by indirect heat exchange;

introducing a flow of concentrated solution into said second endstage of said first set of stages;

returning the resulting solvent vapor to said first endstage through said turbines to thereby furnish work;

returning from said succeeding stages to said first endstage of said first set of stages, a resulting concentrated solution having an amount of said dissolved material equal to the amount initially introduced in said first endstage, and exiting said concentrated solution from said first endstage of said first set of stages;

introducing said returned resulting vapor from said first endstage of said first set of stages through a compressor and into a corresponding first endstage of said second set of stages;

removing said work generated heat from said vapor in said first endstage of said second set of stages by indirect heat exchange to said corresponding first endstage of said first set of endstages so as to condense at least a portion of said vapor;

transferring at least a portion of the remaining vapor through said compressors to succeeding stages of said second set of stages and towards a second endstage thereby absorbing work, while removing work generated heat by indirect heat exchange at each said stage to the corresponding stages of said first set of stages so as to condense said vapor; and

returning from said succeeding stages of said second set of stages to said first endstage of said second set of stages, said condensed solvent vapor, and exiting said condensed solvent vapor from said first endstage of said second set of stages.

4,284,481
METHOD OF FABRICATING A METALLIC HERMETIC SEALING COVER FOR A CONTAINER

Norman Hascoe, 791 Weaver St., Larchmont, N.Y. 10538

Division of Ser. No. 929,836, Jul. 31, 1978, Pat. No. 4,243,729.
This application Apr. 24, 1980, Ser. No. 143,458
Int. Cl.[3] C25D *5/10, 7/06*
U.S. Cl. 204—27 5 Claims

1. The method of fabricating a metallic hermetic sealing cover for a container comprising:

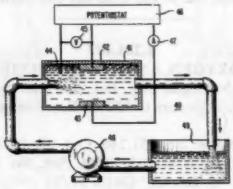
plating a strip of base metal with a material comprising preponderantly a precious metal to a fraction of the ultimate required minimum surface plating thickness;

dividing said strip into cover elements of predetermined size; and plating said cover elements with said material to provide a resultant minimum thickness of surface plating substantially equal to the required minimum thickness.

4,284,482
PALLADIUM TREATMENT PROCEDURE

Joseph Yahalom, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 22, 1980, Ser. No. 189,092
Int. Cl.³ C25F 1/02
U.S. Cl. 204—140 16 Claims



1. A process for making palladium surface and films ductile involving electrochemical oxidation in an aqueous electrochemical solution comprising the step of passing current through a cathode, said aqueous electrochemical solution and an anode characterized in that the palladium film comprises the anode and the anode is maintained at an anode electrode potential greater than the hydrogen electrode potential for one atmosphere pressure of hydrogen and the hydrogen-ion concentration of the aqueous electrochemical solution but less than the electrode potential determined by adding together first, the oxidation potential of palladium metal in the aqueous electrochemical solution and second, 20 percent of the difference between said oxidation potential of palladium and said hydrogen electrode potential.

4,284,483
HYDROXYL-TERMINATED LIQUID POLYMERS AND PROCESS FOR PREPARATION THEREOF USING A MIXTURE OF AT LEAST ONE HYDROXYL-CONTAINING DISULFIDE AND AT LEAST ONE HYDROXYL-CONTAINING TRISULFIDE

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

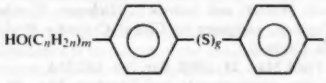
Division of Ser. No. 829,831, Sep. 1, 1977, Pat. No. 4,207,238. This application Jan. 7, 1980, Ser. No. 110,284
Int. Cl.³ B01J 19/12
U.S. Cl. 204—158 R 34 Claims

1. A process for preparing a hydroxyl-terminated liquid polymer having an aliphatic polymeric backbone, said process comprising photo polymerizing

(1) at least one vinylidene monomer having at least one terminal $CH_2{=}C<$ group, together with

(2) at least one hydroxyl-containing disulfide having the formula

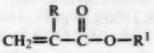
$$HO(C_nH_{2n}O)_m(C_nH_{2n})_p{-}(S)_g{-}(C_nH_{2n})_p(OC_nH_{2n})_mOH \text{ or}$$



wherein m is an integer from 0 to 10, n and p are integers from 1 to 10, and g is 2, and

(3) at least one hydroxyl-containing trisulfide having the formulas above, except that g is 3, the amount of said trisulfide constituting from about 1 wt.% to about 25 wt.% of the total amount of said trisulfide and disulfide, wherein

(4) said vinylidene monomer is selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, and (e) acrylic acids and acrylates having the formula



said R being hydrogen or an alkyl radical containing 1 to 3 carbon atoms, and R^1 being hydrogen or an alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms.

4,284,484
PREPARATION OF 1,3,5,7 TETRAACETAMIDO- AND 1,3,5,7-TETRAAMINOADAMANTANES

Gilbert P. Sollott, Plymouth Meeting, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 10, 1980, Ser. No. 167,572
Int. Cl.³ B01J 19/12
U.S. Cl. 204—158 R 7 Claims

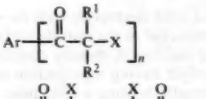
1. A process for preparing 1,3,5,7-tetraacetamidoadamantane, which comprises reacting 1,3,5,7-tetraiodoadamantane with acetonitrile and water in the presence of actinic radiation.

4,284,485
PHOTOCURABLE COMPOSITIONS

Godwin Berner, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,770
Claims priority, application Switzerland, Jul. 13, 1978, 7622/78
Int. Cl.³ C08F 4/00, 2/50
U.S. Cl. 204—159.15 8 Claims

1. A photocurable composition consisting of (a) one or more ethylenically unsaturated, photocurable compounds, (b) at least one photo-initiator of the formula I or II



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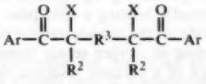


II

in which n is 1 or 2 and, if n is 1, Ar is unsubstituted phenyl or phenyl substituted by one or more of the radicals F, Cl, Br, C_1–C_{12} alkyl, -OAlk, phenyl, -Ophenyl, —SAlk, —SCH_2CH_2OH or -Sphenyl, or indanyl or tetrahydronaphthyl, and Alk is a lower alkyl radical having 1–4 C atoms, and if n is 2 Ar is C_6–C_{12} arylene or a group -phenylene-T-phenylene-, in which T is —O—, —S—, —CH_2— or —CH_2CH_2—, X is one of the groups —NR^4R^5, —OR^6 or —$OSiR^7(R^8)_2$, R^1 is unsubstituted C_1–C_8 alkyl or C_1–C_8 alkyl substituted by —OH, OAlk, C_2–C_8 acyloxy, —NR^4R^5, —COOAlk or —CN, or C_3–C_4 alkenyl, C_5–C_6 cycloalkyl or C_7–C_9 phenylalkyl, R^2 has one of the meanings defined for R^1 or together with R^1 is C_2–C_8 alkylene or C_3–C_9 oxa- or aza-alkylene, R^3 is a direct bond, C_1–C_6 alkylene, C_2–C_6 oxa-alkylene, C_2–C_6 thia-, S-oxothia- or S-dioxothiaalkylene, phenylene, diphenylene or a group -phenylene-T-phenylene-, or together with the two substituents R^2 and the two C atoms to which these substituents are bonded forms a cyclopentane, cyclohexane, endomethylenecyclohexane or cyclohexane ring, R^4 is C_1–C_{12} alkyl or C_2–C_4 alkyl which is substituted by —OH or OAlk, R^5 is C_1–C_{12} alkyl or C_2–C_4 alkyl which is substituted by OH or OAlk, or together with R^4 is C_4–C_5 alkylene, which can be interrupted by —O— or —NR^9—, R^6 is hydrogen, C_1–C_{12} alkyl, C_1–C_8 alkyl substi-

tuted by Cl, Br, OH, OAlk, SAlk, C_2–C_8 acyloxy, —COOAlk, —CONHAlk, —CON(Alk)$_2$ or CN, or C_3–C_5 alkenyl, cyclohexyl, benzyl, unsubstituted phenyl or phenyl substituted by Cl or Alk, or 2-tetrahydropyranyl, R^7 and R^8 are identical or different and are C_1–C_4 alkyl or phenyl and R^9 is C_1–C_4 alkyl, —CH_2CH_2CN or —$CH_2CH_2COOAlk$, and (c) at least one light stabiliser from the category of the polyalkylpiperidine derivatives.

4,284,486

SOLID POLE OXYGEN SENSOR AND ITS MANUFACTURING PROCESS

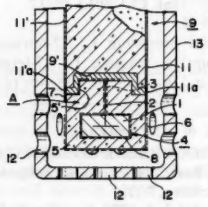
Hiroshi Shinohara, Okazaki; Yasuhiro Otsuka, Toyota; Hideo Kamiya, Toyota; Hiroshi Wakizaka, Toyota, and Toshinobu Furutani, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 21, 1980, Ser. No. 132,415

Claims priority, application Japan, Sep. 22, 1979, 54-122348

Int. Cl.[3] **G01N** *27/58*

U.S. Cl. 204—195 S **32 Claims**



1. A process of manufacturing a solid pole oxygen sensor, said process comprising the steps of:

forming a solid pole by burying one end of a lead wire in a powder mixture and sintering it with the upper end of the wire exposed thereabove;

forming an internal electrode on the outside surface of said solid pole with said internal electrode electrically connected to said lead wire;

enclosing said solid pole in a solid electrolyte with the upper end of said lead wire connected to the outside surface of said solid electrolyte and sintering it, thereby constituting a column of solid electrolyte having a projection on the top side thereof and internally holding a solid pole;

forming an external electrode on the outside surface of said column, thereby completing an oxygen sensor element;

forming on the side surface of a ceramic insulator with a recess formed in the bottom thereof, one electroconductive zone and another electroconductive zone being nonconductive to the former; and

attaching and joining said oxygen sensor element to said insulator in such a manner that said oxygen sensor element is attached to said insulator, with the projection mating with said recess so that said first electroconductive zone may be electrically connected to the upper end of said lead wire and said second electroconductive zone may be electrically connected to said external electrode.

17. A solid pole oxygen sensor comprising:

a lead wire;

a solid pole with one end of said lead wire buried therein, the other end of the wire being exposed;

an internal electrode on the outside surface of said solid pole and electrically connected to said lead wire;

a solid electrolyte enclosing said solid pole and being connected to the other end of said lead wire at its outer surface;

an external electrode on the outside surface of said solid electrolyte;

a ceramic insulator having formed thereon one electroconductive zone and another electroconductive zone spaced therefrom and nonconductive thereto:

a projection on the top of said solid electrolyte;

a recess, of profile matching that of the projection, on the bottom of the ceramic insulator;

said projection being fitted into said recess for joining the element and the insulator; and,

the first electroconductive zone on the insulator is connected to the lead wire, and the second electroconductive zone is connected to the external electrode.

4,284,487

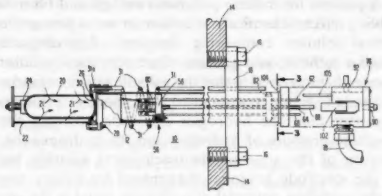
OXYGEN ANALYZER PROBE

Lyle K. Barnes, Michigan City, Ind., and Richard C. Barringer, Morley, Mich., assignors to Milton Roy Company, St. Petersburg, Fla.

Continuation of Ser. No. 951,246, Oct. 13, 1978, abandoned. This application May 27, 1980, Ser. No. 153,004

Int. Cl.[3] **G01N** *27/58*

U.S. Cl. 204—195 S **11 Claims**



1. An oxygen analyzer probe for use in situ in a flue gas stream of a furnace of the type having a housing with a first end adapted to be situated in said furnace and a second end adapted to be external thereto, a solid electrolytic oxygen sensor adjacent said first end of said housing, a first electrode on one side of said sensor, a second electrode on the other side of said sensor, a first noble metal lead connected to said first electrode and a second noble metal lead connected to said second electrode, the improvement comprising:

a terminal block within said housing, said terminal block being more proximate to said first than to said second end, said first and said second noble metal leads being releasably connected to said terminal block;

first and second intermediate leads connected to said first and said second noble metal leads respectively at said terminal block, said first and said second intermediate leads being comprised of a metal dissimilar to said first and said second noble metal leads, and

an electrical connector external to said housing, said intermediate leads being electrically connected to an oxygen analyzer circuit at said connector.

4,284,488

SACRIFICIAL ANODE ASSEMBLY

Robert Brittain, Walsall, and Andrew L. Hickman, Wombourne, both of England, assignors to Global Cathodic Protection, Ltd., Salop, England

Filed Mar. 31, 1980, Ser. No. 135,764

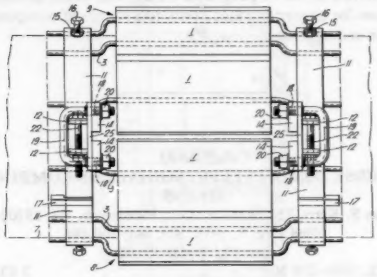
Claims priority, application United Kingdom, Mar. 30, 1979, 11327/79

Int. Cl.[3] **C23F** *13/00*

U.S. Cl. 204—197 **6 Claims**

1. A sacrificial anode for use in cathodic protection, the said sacrificial anode having two parts, each of the parts including two mounting straps, an anode body and an electrically conducting member connected between the mounting straps, the anode body being electrically connected to and mechanically mounted upon the electrically conducting member, a hinge member connecting together a strap of one of the parts and a corresponding strap of the other of the parts, the said straps each being pivotally connected to the hinge member at a re-

spective separate pivot point, whereby the said parts can be hingedly opened in a jaw-like manner while being held together in order to enable them to be arranged about a member



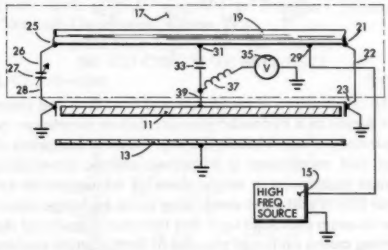
to be protected, and means to clamp together a strap associated with one of the parts and a corresponding strap associated with the other of the parts.

4,284,489

POWER TRANSFER NETWORK

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Sep. 26, 1978, Ser. No. 945,805
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **17 Claims**



1. Apparatus for supplying power efficiently to the discharge plasma load in a sputtering machine by means of r.f. energy of a predetermined frequency in the megahertz range and wherein there is an electrode configuration including target means having a relatively large area and metallic surroundings which are grounded, the stray capacitance of the target means to the surroundings being greater than the order of about 200 picofarads whereby the plasma load has a resistance parallel with the stray capacitance which is substantially greater than the capacitive reactance of the stray capacitance, said apparatus including:

A. a source of megahertz r.f. power having a relatively low impedance at its output of the same order as the capacitive reactance of the stray capacitance,

B. a load network between the source and the electrode configuration, said configuration including said target means and substrate supporting anode means at substantially ground potential, said load network comprising

i. a parallel resonant circuit including a single inductor autotransformer which is formed of conductive tubing,

ii. a first portion of the autotransformer including at most all of the inductor and being connected to a variable tuning capacitor having one plate thereof connected to one end of the first portion, the other plate connected to ground potential and the other end of the first portion connected to ground potential,

iii. a second portion of the autotransformer including less than all of the inductor and defined by an output tap on the inductor and the end of the first portion connected to ground potential, means including a d.c. blocking element and a coupling line extending from said output tap to said target means whereby the stray capacitance is connected in parallel with said second portion of the autotransformer,

iv. said parallel resonant circuit being in resonance at the source frequency with the capacitive reactance of the tuning capacitor and stray capacitance balancing the inductive reactance of that part of the transformer participating in the parallel resonant circuit, and

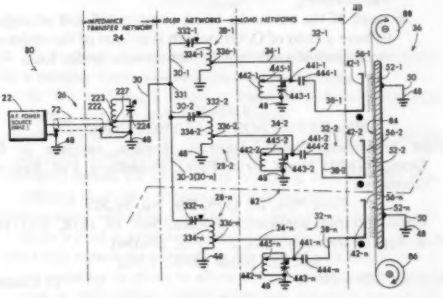
C. an input tap on the inductor and the source being coupled to said input tap, the location of said input tap relative to the inductor being chosen to provide proper impedance match between the source and the parallel resonant circuit, the location of the output tap being chosen to provide the proper impedance match for the plasma of the sputtering machine when operating at a voltage for effective sputtering.

4,284,490

R.F. SPUTTERING APPARATUS INCLUDING MULTI-NETWORK POWER SUPPLY

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 945,805, Sep. 28, 1978. This application Aug. 21, 1979, Ser. No. 66,917
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **50 Claims**



1. Apparatus for supplying power efficiently to the discharge plasma load in a sputtering chamber by means of r.f. energy of a predetermined frequency in the megahertz range which comprises:

A. a source of megahertz r.f. power having an impedance of the order of 50 ohms at its output terminals,

B. electrodes of the type adapted to function as cathode means and anode means during the sputtering process to produce sputtering plasma between them,

C. a pressure chamber including grounded metallic walls having said electrode means mounted therein and including grounded metallic structure surrounding and in relatively close proximity to a substantial portion of at least said cathode means for confining said plasma when generated, the input impedance of said electrode means including deleterious power transfer effects produced by the said surrounding structure and the metallic walls during sputtering operation of said apparatus, said effects being brought about principally by a first capacitive reactance parallel with said plasma having an impedance ohmage of the same order as that of said source impedance but which is a substantial number of times less than the impedance of the resistive component of said plasma, the electrodes being electrically coupled to said plasma during operation of said apparatus,

D. said apparatus including means to provide for transporting a substrate member relative to said anode means within said chamber between the anode means and the cathode means so that the plasma will sputter material derived from said cathode means upon said substrate member during operation of said apparatus and

E. means for coupling said source to said electrodes to transfer power from said source to said plasma which comprises:

i. a string of three inductor and capacitor combination networks each being resonant at the frequency of said source and being connected seriatim between said source and electrodes, the first network following the source being an impedance transfer network effective to raise the voltage and impedance of the source, the second network following the impedance transfer network being an idler network, said idler network being effective substantially to raise the voltage of the impedance transfer network and

a. having an output terminal at a certain voltage and impedance and

b. a coupling line extending from said output terminal to said cathode means so that the output terminal voltage of said idler network is applied to said coupling line at the impedance of said output terminal of said idler network,

the third network being a load network also connected to said coupling line and whose total capacitive reactance participating in the resonance condition of said load network includes the said first capacitive reactance parallel with said plasma,

ii. at least the second and third network inductors being transformers,

iii. each of the networks being constructed and arranged to have a ratio of Q/QL which is at least of the order of ten to provide efficient power transfer under load.

4,284,491

APPARATUS FOR ELECTROPHORESIS

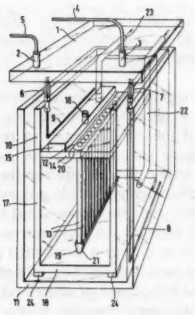
Olof Vesterberg, Saltsj,ö-Duvn,äs, Sweden, assignor to C. Desaga GmbH Nachf. Erich Fecht, Heidelberg, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 94,307

Claims priority, application Sweden, Nov. 13, 1978, 7811719; Fed. Rep. of Germany, Oct. 27, 1979, 2943541

Int. Cl.³ B01D *13/02, 57/02*

U.S. Cl. 204—299 R **10 Claims**



1. A device for conducting electrophoresis for the quantitative determination and/or preparation of chemical substances, said device comprising:

first and second electrode vessel means for containing buffer solution and adapted to be connected to poles of a direct current source;

a plurality of substantially vertical channel means for containing carrier medium and having opposite ends opening into said first and second electrode vessel means, first ends of said channel means commonly opening into a cavity;

means for sealing, in an airtight manner, said cavity and thereby said first ends of said channel means from the interior of the respective said electrode vessel means; and

means for connecting said cavity to a source of overpressure or underpressure.

4,284,492

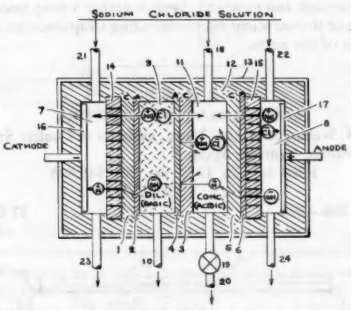
REVERSE OSMOSIS ELECTRODIALYSIS COMBINED MEANS

William S. Karn, 518 Dickson Ave., Pittsburgh, Pa. 15202

Filed Dec. 5, 1979, Ser. No. 100,486

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—299 R **3 Claims**



1. The combination of membrane and fluid flow and electric current means in a hydraulic pressure driven membrane type ion separatory means wherein the improvement comprises that each of said membranes is a cationic-anionic ion-exchange membrane comprising a single sheet of homogeneous resin with one side of said sheet comprising anion exchange material to form an anion exchange layer and the other side of said sheet comprising cation exchange material to form a cation exchange layer.

4,284,493

ELECTROCOATING APPARATUS

Leo L. Case, Troy, and Michael A. Koltuniak, Warren, both of Mich., assignors to Elcoat Systems, Inc., Warren, Mich.

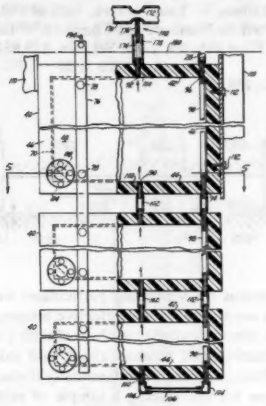
Filed Dec. 18, 1979, Ser. No. 104,876

Int. Cl.³ C25D *113/22*

U.S. Cl. 204—299 EC **17 Claims**

1. In an electrocoating apparatus, a membrane box assembly comprising a plurality of identical membrane boxes, each box having top and bottom walls, side walls and a back wall, each box having a membrane forming the front wall thereof, an electrode plate secured to the inner surface of said back wall, an inlet opening in said bottom wall and an outlet opening in said top wall, aligned openings in said top and bottom walls and a supply tube extending between said aligned openings, support members for supporting two or more of said boxes in vertically stacked relation, piping connecting the lower end of the supply tube of an upper box with the upper end of the supply tube of the next lower box of said assembly, additional piping connecting the outlet opening of a lower box with the

inlet opening of the next upper box of said assembly, and piping disposed exteriorly of the lowermost box of said assembly and



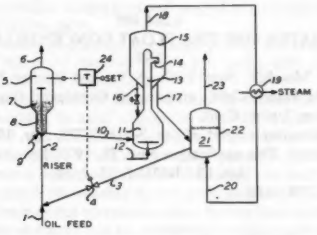
communicating the lower end of its supply tube with its inlet opening.

4,284,494

CONTROL OF EMISSIONS IN FCC REGENERATOR FLUE GAS

David B. Bartholic, Watchung, and John W. Byrne, Saddle Brook, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed May 1, 1978, Ser. No. 901,346
Int. Cl.³ C10G *11/14*; B01J *37/12*
U.S. Cl. 208—164 **5 Claims**



1. In a process for catalytic cracking of a sulfur containing hydrocarbon charge by contacting said charge at cracking temperature with a circulating inventory of cracking catalyst which inventory includes a component capable of sorbing oxides of sulfur in an oxidizing atmosphere and of reaction in a reducing atmosphere to release sulfur as hydrogen sulfide whereby the catalyst acquires an inactivating carbonaceous deposit containing sulfur, separating vaporous products of reaction including hydrogen sulfide from circulating catalyst inventory containing said deposit, regenerating the so separated inventory by contact with air at a temperature to burn said carbonaceous deposit thus generating oxides of carbon and sulfur and regenerating the catalyst, separating products of combustion from regenerated catalyst and returning regenerated catalyst to renewed contact with hydrocarbon charge with reduction of sulfur associated with the regenerated catalyst;

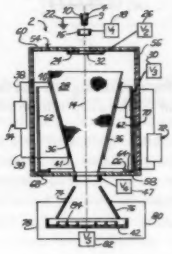
the improvement which comprises again contacting said products of combustion and said regenerated catalyst at a temperature substantially below the temperature of regeneration to thereby induce sorption by said catalyst inventory being returned to contact with said charge of an amount of sulfur oxides greater than that sorbed during said regeneration, and to return said regenerated catalyst to contact with said charge at a temperature substantially below the temperature of said regeneration.

4,284,495

COATING APPARATUS AND METHOD

William A. Newton, Suite 238, 300 East Bldg., 300 31st St., North, St. Petersburg, Fla. 33713

Continuation-in-part of Ser. No. 101,758, Dec. 10, 1979. This application Feb. 15, 1980, Ser. No. 121,895
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—3.1 **21 Claims**



1. An evaporator apparatus for coating individual particles with a coating material, the apparatus comprising:

means for suppling a liquid mixture of said particles, said coating material and a carrier liquid;

droplet forming means for forming a plurality of liquid droplets from said liquid mixture;

charging means for electrically charging said droplets proceeding from said droplet forming means;

temperature regulating means for controlling the temperatures within a predetermined spacial region; and

electrode means for controlling the rate of movement of said evaporating droplets to allow completion of the evaporation of said carrier liquid while said droplets are within said predetermined region;

whereby the evaporation of said carrier liquid encapsulates said particles with said coating material.

4,284,496

PARTICLE GUIDING APPARATUS AND METHOD

William A. Newton, Suite 238, 300 East Bldg., 300 31st St., North, St. Petersburg, Fla. 33713

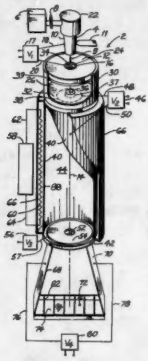
Filed Dec. 10, 1979, Ser. No. 101,758
Int. Cl.³ B07C *9/00*
U.S. Cl. 209—3.3 **50 Claims**

1. In a particle analyzer including droplet forming means for forming a plurality of liquid droplets, having individually isolated particles contained therein, and for initially providing the droplets with a substantially uniform velocity in a substantially linear trajectory, and means for charging the droplets, the improvement comprising:

evaporating means for evaporating the liquid of of the droplets which surrounds the particle therein;

electrode means for generating an electrostatic field for positioning the particles substantially along a center axis and for moving the particles along said center axis at a sufficient rate of movement to allow completion of the

evaporation of the droplets within a predetermined region;



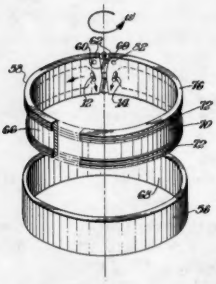
detection means for measuring the particle's characteristics after completion of the evaporation of the droplets.

4,284,497

ROTOR FOR SEDIMENTATION FIELD FLOW FRACTIONATION

John W. Grant, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,850
Int. Cl.³ B03B *5/00*
U.S. Cl. 209—155 **4 Claims**



1. An apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, said channel having an outer support ring and an inner ring separated at a point along its circumference mating with said outer ring to define said channel, the improvement wherein:

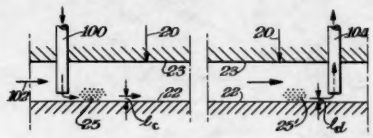
said inner ring has a radial thickness such that the distorting effects of centrifugal force on said inner ring are about balanced by the centrifugal pressure of said fluid medium.

4,284,498

APPARATUS FOR FIELD FLOW FRACTIONATION

John W. Grant, Chadds Ford, Pa.; Joseph J. Kirkland, Wilmington, and Wallace W. Yau, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,852
Int. Cl.³ B03B *5/00*
U.S. Cl. 209—155 **11 Claims**



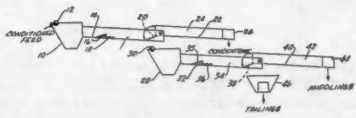
1. An apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing a sample of said particulates into said medium for passage through said channel, the improvement wherein said channel is generally rectangular in cross section, having radially inner and outer walls and inlet and outlet ends, and has an inlet positioned to introduce said particulates approximately at the radial distance **1** inwardly from the outer wall, where **1** is the point of equilibrium between the average force field exerted on each particulate by the rotational centrifugal force and by the normal opposing diffusion forces due to Brownian motion.

4,284,499

APPARATUS FOR THE FLOAT CONCENTRATION OF ORE

Brij M. Moudgil, New York, N.Y., and Booker W. Morey, Portola Valley, Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 897,778, Apr. 19, 1978, abandoned. This application Nov. 28, 1979, Ser. No. 98,363
Int. Cl.³ B03D *1/02, 1/14*
U.S. Cl. 209—166 **11 Claims**



2. Apparatus for the concentration of ore comprising:

(a) a downwardly sloping table;

(b) means for feeding a slurry of ore onto a higher end of said downwardly sloping table;

(c) aerator means disposed along the downwardly sloping table for aerating the ore slurry as the ore slurry flows along the downwardly sloping table;

(d) disperser means disposed in an operative relationship with said aerator means for dispersing ore particles, flowing within the ore slurry and near a surface of said downwardly sloping table, upwardly from said surface and over said aerator means; and

(e) splitter means disposed proximate a lower end of said downwardly sloping table for separating the ore slurry into a float concentrate and a non-float fraction.

4,284,500

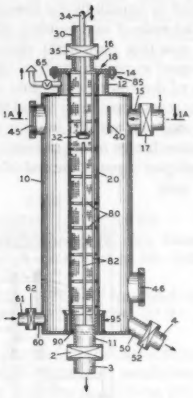
IN-LINE PRESSURIZED WET SCREENING APPARATUS

David R. Keck, Seabrook, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jan. 18, 1980, Ser. No. 113,258

Int. Cl.³ B07B *1/18, 1/50*

U.S. Cl. 209—250 **9 Claims**



1. A pressurized in-line wet screening apparatus for separating oversize particles from a fluid slurry comprising:

a rigid, hollow body member capable of withstanding the pressure of the fluid slurry, the body member having a valved slurry inlet port and a slurry outlet port, each port adapted to mate with slurry conduit means;

a washer access port opposite from the slurry outlet port;

a hollow, open-ended screen assembly fixedly mounted within the body member between the slurry outlet port and the washer access port and in axial alignment with the washer access port;

a valved oversize particle discharge port at the lowermost end of the body member adapted to mate with oversize particle conduit means; and

retractable backwasher means externally mounted on the body member in axial alignment with the washer access port and the screen assembly, where the backwasher means comprises a fluid discharging spray head adapted to pass from a retracted position outside of the body member, through the washer access port and axially through the interior of the screen assembly during backwashing to dislodge and wash out accumulated oversize particles, and then to withdraw to its retracted position.

4,284,501

CONTROL APPARATUS FOR PURIFYING ACUMULATED CONDENSATE

Friedrich Schön, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

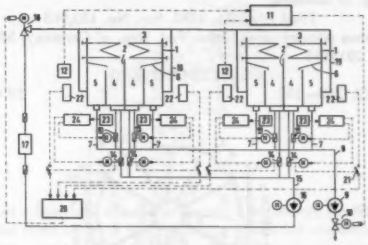
Filed Aug. 28, 1980, Ser. No. 182,231

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935106

Int. Cl.³ C02B *1/00*

U.S. Cl. 210—96.1 **2 Claims**

1. Control apparatus for the purification of collected condensate, comprising condensers, at least two collecting chambers having open tops and at least two collecting chambers having covered tops for said condensers, a feed line having connections to said covered collecting chambers and connections for receiving run-off from said open collecting chambers, a first set of shut-off valves disposed in said feed line connections to said open collecting chambers, a main condensate pump disposed in said feed line, a purification line having connections for receiving run-off from said open collecting chambers and leading to at least one covered collecting chamber, a second set of shut-off valves disposed in said purification line connections to said open collecting chambers, a purification pump disposed in said purification line, a filter arrangement disposed in said purification line, means for measuring conductivity of condensate in at least one of said open collecting chambers and for maintaining one of said first and second sets of shut-off valves in an open position while the other of said sets is in a closed position depending on the measured conductivity, means for measuring condensate level in said open collecting chambers, and maximum selection means connected to said condensate level measuring means for adjusting flow rate through said purification line depending on condensate level in said open collection chambers.



4,284,502

APPARATUS FOR TREATING UREMIC PATIENTS

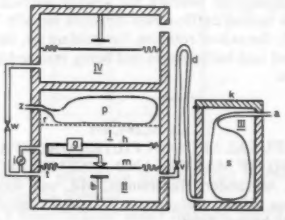
Peter Kramer, Goettingen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 938,759, Sep. 1, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 88,065

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739350

Int. Cl.³ B01D *31/00*; A61M *1/03*

U.S. Cl. 210—98 **5 Claims**



1. Apparatus comprising means for treating the blood of uremic patients constructed and arranged to separate freshly withdrawn blood by means of a filter into plasma water and residual blood, the plasma water being passed into an exchange device from which a substitution solution is returned into the blood circulation after combination with the residual blood,

said exchange device comprising a closed container which is completely filled with fluid and can be closed air-tight,

said container further comprising separate enclosed chamber I and enclosed chamber II, which are separated from one another by a movable or flexible partition, chamber I being filled with fluid and being constructed and arranged to take up additional plasma water, and chamber II being filled with substitution solution,

said exchange device further comprising means to exert pressure by weight on said partition so as to create a

suction in chamber I and a corresponding pressure in chamber II.

4,284,503

DEVICE FOR AERATING SEWAGE OR SEWAGE-SLUDGES

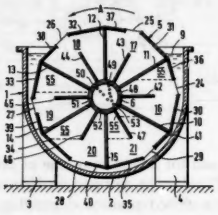
Theo Stähler, Mühlenhof, 6253 Hadamar-Niederzeuzheim, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,905

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911975

Int. Cl.[3] **C02F** *3/08*

U.S. Cl. 210—150 **18 Claims**



1. A device for aerating sewage or sewage-sludges for the purpose of converting any harmful substances contained therein into harmless substances, said device comprising a sludge-aerating basin, a hollow element positioned to rotate therein about its axis, said hollow element being spaced from the inner wall of said basin; a portion of said hollow element protruding above sewage level when the basin is full, said hollow element having partitions directed parallel to and substantially and radially outwardly from the axis of rotation forming outwardly-open reaction chambers, the outer ends of said partitions continue approximately peripherally in both directions forming front and rear covering webs adjacent their outer portions having slotted apertures therebetween, with the front covering webs extending downwardly at the point where the partition dips beneath sewage surface, and the rear covering webs extending downwardly at the point where the partition emerges from beneath the sewage surface, said reaction chambers having baffle-plates directed radially from, and parallel with, the axis of rotation, for guiding air, the air effervescing around said baffle plates and being retained in said reaction chambers.

4,284,504

CENTRIFUGAL SPIN-ON FILTER OR SEPARATOR AND METHOD OF MAKING AND ASSEMBLING THE SAME

Willis R. Alexander, Hagerstown, Md., and Robert J. Shaltis, Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Filed Oct. 9, 1979, Ser. No. 82,548

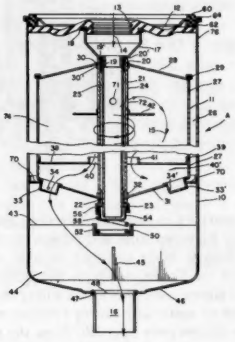
Int. Cl.[3] **B04B** *9/00*

U.S. Cl. 210—168 **14 Claims**

1. A centrifugal separator cartridge comprising a cylindrical spin-on housing having opposite inlet and outlet ends and an intermediate cylindrical wall connected to said ends, a screw threaded inlet through said inlet end for liquid to be treated, an outlet through said outlet end for treated liquid, a hollow inner shaft non-rotatably mounted longitudinally within said spin-on housing, first adapter means separably connecting one end of said inner shaft with the inlet of said housing for passage of liquid through said inlet into said shaft, longitudinally spaced bearing members encompassing the exterior of said inner shaft adjacent its opposite ends,

a centrifugal separator rotor unit within said housing rotatably mounted by said bearing members on said inner shaft, said rotor unit comprising a cylindrical rotor casing having opposite end covers provided with aligned end openings, a sleeve mounted in said opposite end covers and extending through said end openings to rotate with said rotor casing, said bearing members being fitted in opposite ends of said sleeve and spacing said sleeve from said inner shaft, the inner shaft and bearing members projecting longitudinally beyond the end openings in the rotor casing and covers, said rotor unit being supported upon said inner shaft in longitudinally spaced relationship with inlet and outlet ends of said housing, the inner shaft and sleeve having coacting peripheral openings adjacent the inlet ends thereof to permit the flow of liquid directly into the interior of the rotor casing, said rotor unit having outlet liquid jet means providing liquid flow between the interior of the rotor unit and the interior of the housing whereby jet reaction forces rotate the rotor unit,

a second adapter capping the end of said inner shaft opposite its inlet end,



a spring supporting pedestal secured within said housing and longitudinally spaced between said rotor unit and the outlet of the housing, a spring supporting recess within said pedestal, and spring means having one end seated in said recess and another end pressed against said second adapter means and urging said second adapter means, said rotor unit, said inner shaft and first adapter means together toward said inlet end of said housing where said first adapter means is pressed against the inlet end of said housing,

said spring supporting pedestal having liquid passage means therethrough for liquid flow from said rotor unit to said housing outlet, and

said first adapter being a funnel-shaped member having an enlarged end seated against the inlet end of said housing about said inlet and a reduced neck portion fitting into the inlet end of said inner shaft.

4,284,505

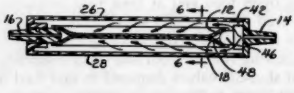
FLEXIBLE MEMBRANE FILTER ASSEMBLY

J. Lee Pope, Jr., Baltimore, Md., and James W. Scott, Lindenhurst, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 29, 1979, Ser. No. 89,601

Int. Cl.[3] **B01D** *31/00*

U.S. Cl. 210—236 **9 Claims**



1. A filter assembly comprising:

housing means defining an interior fluid passageway and inlet and outlet opening means communicating therewith;

a pair of spaced-apart facing co-extensive microporous filter membranes carried within said fluid passageway in parallel flow relationship to filter liquid passing therealong at a selected pressure;

said membranes having a modulus of elasticity to maintain said membranes spaced from each other at a selected normal flow pressure and to permit said membranes to flex to a mutually supporting position, where each membrane substantially fully rests against the other membrane at a flow pressure higher than said selected flow pressure,

said membranes being spaced apart a selected distance which is sufficiently small that the stress in each of said flexed membranes does not exceed its elastic limit when resting substantially fully against said other membrane.

4,284,506

BIOMEDICAL DEVICES

Marvin T. Tetenbaum, Lawrenceville, and Barton C. Case, Hightstown, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

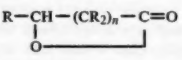
Filed Dec. 26, 1979, Ser. No. 106,571
Int. Cl.³ B01D *31/00*; B29C *27/14*
U.S. Cl. 210—321.4 **10 Claims**

1. In a separatory device capable of use in biomedical applications wherein at least one separatory membrane is secured in a housing, in a manner sufficient to perform the selected biomedical function, by means of a flexible cured polyurethane composition provided by reacting a first component comprising an NCO-terminated prepolymer with a second component comprising at least one polyol, the improvement comprising using as said polyurethane composition the reaction product of:

A. at least one of said NCO-terminated prepolymers, and

B. at least one hydroxyl-terminated lactone polyester having an average molecular weight of between about 200 and about 1000 comprising the reaction product of:

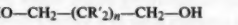
1. at least one lactone represented by the structural formula:



wherein n is an integer which can vary from 1 to about 10, and R is selected from the group consisting of hydrogen, alkyl, cycloalkyl, and alkoxy groups, having from about 1 to about 6 carbon atoms; and

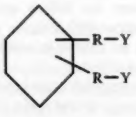
2. at least one saturated difunctional polyol selected from the group consisting of

(a) glycols represented by the structural formula:



wherein n is an integer which can vary from about 0 to 12, and R′ is selected from the group consisting of hydrogen and an alkyl group having from about 1 to about 6 carbon atoms; and

(b) cycloaliphatic polyols represented by the structural formula:



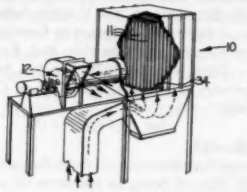
wherein R is an alkyl group having from about 1 to about 6 carbon atoms and Y is a primary hydroxyl group.

4,284,507

KNIT PILE FILTER

Frank T. Beane, Rte. #7, Highway #49, Concord, N.C. 28025

Continuation-in-part of Ser. No. 904,485, May 10, 1978. This application May 9, 1979, Ser. No. 37,286
Int. Cl.³ B01D *23/04, 29/14, 46/02*
U.S. Cl. 210—435 **15 Claims**



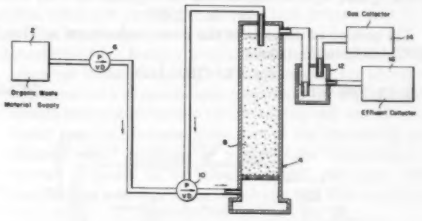
11. In a bag filter apparatus having a fabric bag for filtering material from flowing fluid, housing means for enclosing and supporting said bag, and circulating means including inlet and outlet means for directing a flow of fluid through said housing means and said bag, the improvement wherein said bag comprises a tube of circularly knitted crimped, synthetic yarn having a denier in the range of from about 70 to about 300 and knit into stitches defining a ground and stitches defining terry loop pile extending from the ground to a predetermined height, the stitches defining open areas in the range of from about 1 micron to about 100 microns, and the tube being closed at one end.

4,284,508

METHANE PRODUCTION BY ATTACHED FILM

William J. Jewell, 202 Eastwood Ave., Ithaca, N.Y. 14850

Filed Oct. 1, 1979, Ser. No. 80,559
Int. Cl.³ C02F *3/28*
U.S. Cl. 210—603 **12 Claims**



1. A method for producing methane and carbon dioxide gases, comprising the steps of

(a) seeding a dilute organic waste material with a heterogeneous bacterial culture including a methane-producing bacteria;

(b) supplying said seeded waste material to an anaerobic attached film expanded bed reactor containing a particulate support media having a film coated thereon, said support media comprising porous water-insoluble inorganic biomaterial, each particle of which has a diameter of from about 5 to less than 200 microns;

(c) establishing a low-velocity upward flow of said seeded waste material through said reactor to expand the bed of support media by about 20% through which the particulates of said support media are evenly distributed, said bacterial compound being attached to said film and reacting with said organic material to produce methane gas and residual, effluent material, said residual, effluent material being filtered by said film during upward flow therethrough; and

(d) separating said methane gas from said effluent material,

whereby methane gas is continuously produced from a supply of organic waste material.

4,284,509

PROCESS FOR REMOVING OILS OR PETROLEUM FROM THE SURFACE OF THE SEA

Walter Lindörfer, Kassel; Fritz Wagner, Stöckheim; Wilhelm Jahn-Held, Staufenberg, and Walther Schulz, Vechta, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung, Brunswick, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,865

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911016

Int. Cl.[3] **C02F** *1/54*

U.S. Cl. 210—610 **6 Claims**

1. A process for removing oil from the surface of the sea and from shoals, this oil being in the form of a layer left behind after the majority of the oil floating on the water has been pumped away or otherwise removed, comprising the steps of applying to said layer an effective amount of metabolites of microbially produced glycolipids which consist of mono- or diesters of α,α′-trehalose and α-alkyl-β-hydroxy fatty acids having at least 10 carbon atoms in said alkyl group and which contain mono-, di- or oligo-saccharides as the hydrophilic component and which reduce the surface and interface tension of the oil/water system in order to form agglomerates of the oil, and then removing the agglomerates from the surface of the water.

4,284,510

TWO ZONE PROCESS FOR BIOLOGICAL TREATMENT OF WASTE WATER

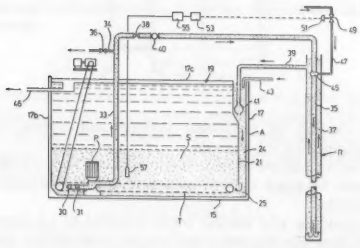
Guy Savard, Westmount; Robert G. H. Lee, Montreal, and Derek Hornsey, Roxboro, all of Canada, assignors to Canadian Liquid Air Ltd./Air Liquide Canada LTEE., Montreal, Canada

Continuation-in-part of Ser. No. 905,008, May 11, 1978, Pat. No. 4,192,740, which is a continuation-in-part of Ser. No. 730,478, Oct. 7, 1976, abandoned. This application Nov. 8, 1979, Ser. No. 92,283

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.[3] **C02F** *3/26*

U.S. Cl. 210—614 **7 Claims**



1. A process of treating waste water containing biodegradeable waste to provide a clarified liquid effluent and a disposable sludge, in which waste water is continuously passed through a single treating enclosure open to the atmosphere containing waste-degrading microorganisms, to which oxygen is added to sustain the microorganisms and from which the clarified effluent is continuously overflowed and from which excess sludge and gases are removed; in which there is initially established a charge including (a) in a lower part of the enclosure a biological reaction zone containing mixed liquor containing said microorganisms and in which a biological reaction to degrade the waste is conducted, (b) in an upper part of the enclosure a clarification zone in which clarified liquid rises and overflows, and (c) between the reaction and clarification zones a transition zone in which the liquid of the mixed liquor rises and the solids settle; and continuously there is withdrawn from the biological reaction zone a recycle stream of mixed liquor from the reaction zone and the stream conducted through an oxygen-dissolving device disposed outside the reaction zone and influent waste water and oxygen are added to it; the thus supplemented stream is injected into a lower part of the reaction zone remote from the vicinity of withdrawal, the waste water is conducted into the recycle stream at a variable rate within a range related to the depth and surface area of the enclosure to provide a residence time within the reaction zone effective for the biodegradation of the waste and for the formation and settling of biological floc, oxygen is added to said recycle stream at a rate to provide an oxygen concentration within a controlled range below the saturation level of oxygen in the liquid effective to meet the oxygen demand of the organisms and maintaining it in contact with the liquid in a contact zone of said stream for a time and under a pressure such that the oxygen is dissolved in the liquid; the overall flow rate of said recycle stream is controlled to a substantially constant rate several times that of the incoming waste water effective to provide (d) for dissolving the oxygen which is added to the recycle stream, (e) an amount of dilution of the recycle stream entering the reaction zone effective to prevent the oxygen coming out of solution at an upper part of the reaction zone, the flow of said supplemented recycle stream entering the reaction zone is distributed to reach a substantial area of a lower part thereof, (f) to provide a wide spread direct flow through the reaction zone, from the vicinity of injection to the vicinity of withdrawal, whereby there is controlled agitation effective to keep the solids dispersed, and good access of the organisms to the biodegradeable waste, (g) and to provide, at an intermediate level of the enclosure, an upward velocity of the mixed liquor less than the settling rate of the solids, whereby there is maintained in the enclosure said separate reaction and clarification zones intervened by said transition zone; the concentration of dissolved oxygen in the reaction zone is continuously monitored to determine variations thereof resulting from variations in the flow rate and concentration therein of waste; the rate of addition of the oxygen to the recycle stream is periodically adjusted in response to variations in the oxygen concentration in the reaction zone to maintain said concentration within said controlled range and at a level where there is substantially avoided effervescence that would lead to gas bubbles rising into the clarification zone; the effluent is continuously withdrawn from the clarification zone to keep pace with the influent waste water; and the excess sludge is continuously removed from the reaction zone and carbon dioxide from the mixed liquor, comprising the steps of,

continuously injecting along the bottom of the biological reaction zone said supplemented recycle stream in a horizontal shallow inflow having a width substantially greater than its depth, and withdrawing mixed liquor from near the bottom of the reaction zone at a vicinity remote from the inflow in an outflow having a substantially greater width than its depth, thereby to provide between the inflow and the outflow a horizontally flowing undercurrent having an extensive uninterrupted interface with an overlying relatively quiescent upwardly flowing body of mixed liquor, and in which,

the depth of the charge is from about 8 feet to about 100 feet,

the depth of the clarification zone is at least about 2 feet,

the distance between the inflow and the outflow is from about 6 feet to about 200 feet,

the initial depth of the inflow is within the range from about 6 inches to about 6 feet,

the depth of the biological zone is at least about 2 feet,

the calculated average linear velocity of the inflow at the vicinity of the injection is within the range from about 1 to about 35 feet per minute,

the average horizontal velocity in the reaction zone is within the range from about $\frac{1}{2}$ to about 20 feet per minute,

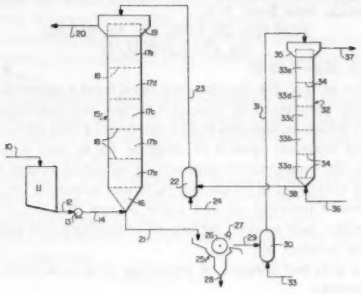
and the recirculation rate is within the range from about 1 to about 15 times the average waste water influent flow rate.

4,284,511

PROCESS FOR USING MAGNETICALLY BALLASTED SORBENTS

William Weitzen, Bethesda, Md., and Jerry C. Trippe, Fairfax Station, Va., assignors to General Technology Applications, Inc., Rosslyn, Va.

Filed Aug. 30, 1979, Ser. No. 71,040
Int. Cl.³ B01D *15/02*
U.S. Cl. 210—661 **15 Claims**



8. A process for sorbing heavy metal ions from aqueous solution comprising:

passing said ion-containing solution upwardly through a bed of sorbent granules at a rate sufficient to at least about double the settled volume of the granules, said granules ballasted with at least 5% by weight of finely divided particles of a corrosion resistant, iron-chromium, magnetic alloy and displaying a settling velocity in the liquid of at least about 30 cm per minute;

periodically removing from the bottom of said bed a portion of liquid containing sorbent granules loaded with sorbed heavy metal ions and magnetically separating the sorbent granules from the liquid, and

introducing a like portion of fresh sorbent granules into the top of said bed.

4,284,512

IRON SELECTIVE RESINS PREPARED FROM A PHENOL, HCHO AND A DI-SECONDARY AMINE

Jonathan H. Hodgkin, Burwood, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia

Filed Dec. 3, 1979, Ser. No. 100,020
Claims priority, application Australia, Nov. 29, 1979, PE1490
Int. Cl.³ C02F *1/42, 1/64;* C08G *14/06, 14/12*
U.S. Cl. 210—688 **14 Claims**

1. A metal-chelating resin, selective for ferric ions and consisting of the acid-quaternized form of cross-linked polymer produced by the condensation of a phenolic component comprising one or more phenols, formaldehyde, and a diamino component consisting essentially of one or more di(secondary amino) compounds under neutral conditions.

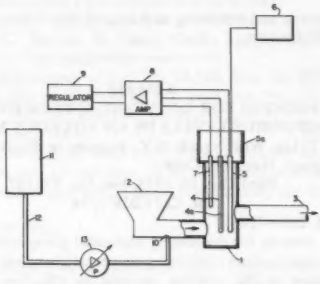
12. A method for the selective removal of ferric ions from an aqueous solution which comprises contacting the solution with a resin as claimed in claim **1**.

4,284,513

PROCESS FOR PREVENTING ENCRUSTATIONS ON SURFACES WHICH ARE IN CONSTANT CONTACT WITH AQUEOUS SOLUTIONS CONTAINING MATTER PRONE TO CRYSTALLIZE

Gerhardt Scholl, Spiesen-Elversberg, and Friedrich Hofmann, St. Ingbert, both of Fed. Rep. of Germany, assignors to Saarberg-Hoelter Saarbergwerke A.G. and Umweltstechnik GmbH, both of Saarbrucken, Fed. Rep. of Germany

Continuation of Ser. No. 891,408, Mar. 29, 1978, abandoned.
This application Jul. 20, 1979, Ser. No. 59,358
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713540; Mar. 28, 1977, 2713544
Int. Cl.³ C02F *5/12, 5/14;* C23F *15/00*
U.S. Cl. 210—699 **11 Claims**



1. Method for preventing the deposit of precipitated crystalline materials on the surface of measuring equipment receivers for equipment in power plant gas desulfurizing installations, whose measuring cell is flowed through by a material tending to crystallize out containing aqueous liquid for measuring the physical or chemical properties of this liquid, characterized by the fact that the liquid flowing to the measuring receiver has a chemical substance conducted into it which forms a thin protective film on the surface to be protected, and further

characterized by feeding solution from a container to an electrode in the measuring cell and pumping the chemical substance by a proportioning pump into the liquid immediately before it flows into the measuring cell, and flowing liquid and the chemical substance in the measuring cell through small openings in a glass tube surrounding a second electrode in the measuring cell, said glass tube constituting a surface upon which the thin film is formed.

4,284,514

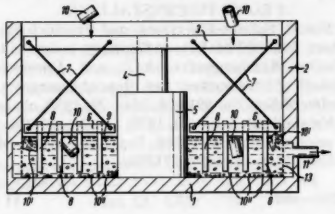
TREATMENT OF HAZARDOUS WASTE

David R. Wright, Tring, England, assignor to Stablex A.G., Zug, Switzerland

Filed Dec. 20, 1979, Ser. No. 105,712
Claims priority, application United Kingdom, Dec. 29, 1978, 50209/78
Int. Cl.³ C02F *1/52, 1/72*
U.S. Cl. 210—721 **13 Claims**

1. A process for pretreating hazardous waste received in containers at a waste disposal plant prior to solidification, such method comprising placing the containers unopened in a vessel containing a liquid pretreatment media which neutralizes, precipitates or chemically modifies said hazardous waste, submitting the containers in the vessel to an agitating process which ruptures the containers thereby depositing the hazardous waste into the vessel to be acted upon by the pretreatment

media thoroughly mixing said hazardous waste and pretreatment media to form a treated liquid and reduce said containers



to particles, and removing said treated liquid from said vessel for solidification.

4,284,515

PROCESS FOR DECREASING ELEMENTAL PHOSPHORUS LEVELS IN AN AQUEOUS MEDIUM

Chong T. Liu, West Nyack, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 10, 1979, Ser. No. 102,167
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—724 **6 Claims**

1. A process for decreasing elemental phosphorus levels in an aqueous medium containing elemental phosphorus comprising adding to the aqueous medium an effective amount of caustic of the formula $M(OH)_n$ wherein M is selected from the group consisting of lithium, sodium, potassium, magnesium, calcium and barium, and n is a valence factor for M, being 1 where M is selected from lithium, sodium and potassium and 2 where M is selected from magnesium, calcium and barium, the effective amount being an amount sufficient to increase the pH of the aqueous medium to at least about 11, to produce a basic aqueous medium.

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PROCESS FOR THE REMOVAL OF LOW LEVEL (PPM) HALOGENATED CONTAMINANTS

Dane K. Parker, Massillon, and Richard J. Steichen, Fairlawn, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 4, 1980, Ser. No. 118,294
Int. Cl.³ C02F *1/70*
U.S. Cl. 210—757 **5 Claims**

1. A process for the dehalogenation of low level concentrations (PPM) of polychlorinated biphenyls (PCB's) dispersed within a contaminated substrate wherein said contaminated substrate is contacted with a reagent in the molar ratio of 25 to 500 moles of reagent per mole of halide contaminant contained within the fluid substrate; said reagent being prepared by:

(1) dispersing molten alkali metal selected from the group consisting of lithium, sodium and potassium at a temperature of at least 150° C. in the contaminated substrate that is inert toward the alkali metal and has a boiling point above the melting point of the alkali metal in the ratio of 250 milliliters of contaminated substrate per mole of alkali metal;

(2) cooling the dispersed molten alkali metal/contaminated inert fluid mixture to ambient temperature with vigorous agitation under an inert atmosphere then adding;

(3) 1.3 moles of an aromatic radical anion forming compound selected from the group consisting of biphenyls, alkyl substituted biphenyls, naphthalene, alkyl substituted naphthalene, anthracene, alkyl substituted anthracenes, naphtacene, alkyl substituted naphtacene, ortho, meta and para terphenyl, and alkyl substituted terphenyls dissolved in 500 milliliters of a nonhydroxylic ether containing solvent selected from the group consisting of dimethyl ether, ethylene glycol dimethyl ether and tetrahydrofuran, with stirring.

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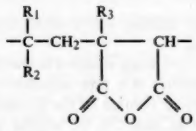
OIL RECOVERY BY WATERFLOODING EMPLOYING ANIONIC POLYMERIC SURFACTANTS

Catherine S. H. Chen, Berkeley Heights, and Edward W. Shepard, Lambertville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

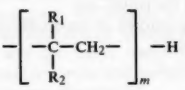
Filed Oct. 26, 1978, Ser. No. 954,844
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **8 Claims**

1. In a method for the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems in which an aqueous fluid is introduced into said reservoir via said injection system to displace oil to said production system, the improvement comprising including in said fluid an anionic surfactant in an amount sufficient to reduce the interfacial tension between oil and water to less than 0.1 dyne per centimeter, said anionic surfactant comprising the polymeric reaction product of:

(1) a polymer formed of recurring structural units of the formula:



wherein R_1 and R_2 are the same or different and are hydrogen or alkyl, aryl, alkaryl, or aralkyl radicals having up to 50 carbon atoms and R_3 is hydrogen or is a moiety of the formula:



wherein m is from 1 to 25 and R_1 and R_2 have the meaning stated above, and

(2) an amine of the formula:

$$(Y)_n—R_4—NH_2$$

wherein R_4 is alkyl, aryl, alkaryl or aralkyl containing up to 50 carbon atoms,

Y is a sulfonate of the formula:

wherein M is hydrogen, an alkali metal, an alkaline earth metal, the ammonium ion or a substituted ammonium ion, and

n is a whole number from 1 to 3 in which polymeric reaction product at least 20 mol percent of the anhydride groups have been converted, by reaction with said amine, to succinimide or succinamide groups.

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STABILIZED HYBRID LUBRICANT

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y.

Continuation-in-part of Ser. No. 914,908, Jun. 12, 1978, Pat. No. 4,224,173, which is a division of Ser. No. 809,805, Jun. 24, 1977, Pat. No. 4,127,491. This application Jun. 10, 1980, Ser. No. 158,329

Int. Cl.³ C10M *1/30, 1/26, 3/24, 3/20*

U.S. Cl. 252—16 **3 Claims**

1. A hybrid lubricant additive dilutable in a conventional fluid oil lubricant to provide a working lubricant applicable to metallic working surfaces such as those found in internal combustion engines, said hybrid lubricant additive comprising:

A: a colloidal dispersion of polytetrafluoroethylene particles having inherent defoaming characteristics;

B: a neutralizing agent added to said dispersion in an amount stabilizing the dispersion to prevent agglomeration of the particles;

C: a fluorochemical surfactant possessing foam-generating characteristics added to said dispersion in an amount insufficient to generate foam but sufficient to enhance the stability of the dispersion

said surfactant is a nonionic surfactant belonging to the chemical class of fluorinated alkyl esters having an ability to foam low polarity hydrocarbon liquids; and

D: a fluid oil lubricant carrier intermingled with the stabilized dispersion.

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HALOCARBON OIL COMPOSITION

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest

Continuation-in-part of Ser. No. 158,329, Jun. 10, 1980. This application Jul. 10, 1980, Ser. No. 168,317

Int. Cl.³ C10M *3/24, 3/20, 3/02*

U.S. Cl. 252—16 **6 Claims**

1. A non-reactive halocarbon oil composition suitable for use as a hydraulic fluid and as a lubricant, the composition including a dispersion in the oil of solid lubricant particles having inherent defoaming characteristics, the particles being in the micron size range, and a fluorochemical surfactant possessing foam-generating characteristics in an amount insufficient to generate foam but sufficient to stabilize the dispersion and enhance the lubricity of the oil, said surfactant is a nonionic surfactant belonging to the chemical class of fluorinated alkyl esters.

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STABLE AND NON-CORROSIVE POLYSULPHIDES DERIVED FROM OLEFINS AND HAVING DIFFERENT SULPHUR CONTENTS, PROCESS FOR THEIR MANUFACTURE AND APPLICATIONS THEREOF

Jean Bolle, Evaux les Bains, and Andre Dabir, Paris, both of France, assignors to Institut National de Recherche Chimique Appliquee, France

Filed May 15, 1979, Ser. No. 39,245

Int. Cl.³ C10M *1/39, 3/32*

U.S. Cl. 252—45 **3 Claims**

1. Stable and non-corrosive polysulphide derived from isobutylene and diisobutylene, suitable as lubricating and industrial oil additive, having a sulphur content from 22 to 45% for a substantially zero content of chlorine and a corresponding refractive index n_D^{20} from 1.515 to 1.580, the molecular structure of said polysulphide including residual unsaturations having no rings or sulphur-containing heterocyclic rings, said polysulphide having a molecular weight of 300 to 600, a practically zero ash content and a Luchaire inflammability temperature higher than 90° C.

2. A process for selectively manufacturing polysulphides according to claim 1 having a quantity of sulphur from 22 to 45% and substantially zero content of chlorine, and a corresponding refractive index of 1.515 to 1.580, comprising

in a first step, forming a first intermediate by adding, until refusal, isobutylene to sulphur monochloride at ambient temperature;

in a second step, running diisobutylene into said first intermediate, adding additional sulphur monochloride, and reacting said first intermediate, said diisobutylene and said additional sulphur monochloride under the application of heat to form a second intermediate; and

reacting said second intermediate with sodium sulphide and separating the resultant polysulphide.

4,284,521

REDUCED ALKALINE EARTH METAL POWDERS AND PROCESS FOR PRODUCING SAME

David A. Payne, Champaign; Sang M. Park, Urbana, both of Ill., and Otto C. Jahnke, El Cajon, Calif., assignors to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 23,722, Mar. 26, 1979, abandoned. This application Jul. 23, 1980, Ser. No. 171,301

Int. Cl.³ C04B *35/46;* **H01B** *1/06*

U.S. Cl. 252—62.3 BT **9 Claims**

1. A reduced alkaline earth metal titanate powder having a mean particle size of less than 10 microns, and a perovskite lattice structure doped with a metal oxide having the formula

$$(MO_3)\,(Bi_2O_3)_x$$

where M is tungsten or molybdenum, and x ranges from 0 to 7, the doping being in an amount sufficient to provide n-type semiconductivity, said powder being produced by calcining a mixture of materials which, as a result of said calcining operation, yields said reduced alkaline earth metal titanate powder.

4,284,522

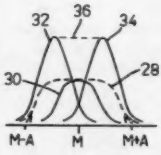
HIGH FIRE POINT DIELECTRIC INSULATING FLUID HAVING A FLAT MOLECULAR WEIGHT DISTRIBUTION CURVE

John H. Olmsted, New Berlin, Wis., assignor to RTE Corporation, Waukesha, Wis.

Continuation-in-part of Ser. No. 893,044, Apr. 3, 1978, abandoned. This application Feb. 27, 1979, Ser. No. 15,608

Int. Cl.³ H01B *3/22*

U.S. Cl. 585—6.6 **12 Claims**



1. A method for producing a blend of oil having a substantially equal molecular weight density within predetermined molecular weight boundaries, said method comprising the steps of establishing for a predetermined quantity of blended oil a pseudo-rectangular molecular weight distribution curve having predetermined molecular weight limits, determining the molecular weight distribution curves for equal quantities of a number of candidate natural and synthetic hydrocarbon oils, selecting from the distribution curves for the candidate oils a first curve that fills a portion of the established pseudo-rectangular distribution curve, selecting from the remaining distribution curves for the candidate oils those curves which when combined with the selected first curve and with each other fill the remaining portion of the pseudo-rectangular curve and blending the quantities of oils represented by the selected curves.

4. The method of producing a blend of oil intended for use in an oil filled electrical apparatus, the blend of oil having a substantially equal molecular weight density within predetermined molecular weight limits, said method comprising the steps of establishing a pseudo-rectangular molecular weight distribution curve having molecular weight limits of 500–700, determining the molecular weight distribution curves for equal quantities of a number of candidate synthetic and natural hydrocarbon oils, selecting from the distribution curves for the candidate oils a first curve that fills a portion of the established pseudo-rectangular distribution curve, selecting from the remaining distribution curves for the candidate oils those curves which when combined with the selected first curve and with each other fills the remaining portion of the pseudo-rectangular curve, normalizing the selected distribution curves to the predetermined quantity and blending the selected hydrocarbon oils represented by the selected distribution curves to form the liquid blend.

7. A liquid blend intended for use in an oil-filled electrical apparatus to minimize the detrimental effects that can occur during high fault conditions which oil composition is a biodegradable and environmentally safe oil and consists essentially of a blend of oils including a natural saturated hydrocarbon oil and a synthetic saturated aliphatic hydrocarbon oil, said blend having a substantially equal molecular weight density in the range molecular weight range of about 500 to about 700, a fire point above 200° C. and a pour point near 0° C.

4,284,523

MINIMIZING OXYGENATED AROMATIC COMPOUND CONTENT OF AQUEOUS SOLUTION OF RECLAIMED METAL OXIDATION CATALYST

John K. Darin; Walter Partenheimer, both of Naperville, Ill., and Joseph D. Figuly, Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 968,073, Dec. 11, 1978, abandoned.
This application May 22, 1980, Ser. No. 152,159
Int. Cl.[3] **B01J** *23/94, 23/92;* **C07C** *51/265;* **C01G** *45/00, 51/06*
U.S. Cl. 252—420 **5 Claims**

1. The method of reclaiming catalyst metals comprising cobalt and manganese from the residue obtained after separation of benzene di- and/or tricarboxylic acid from the liquid effluent obtained by the liquid phase oxidation of a xylene or a trimethylbenzene and after the evaporation of low boiling materials from the liquid following such separation, or after separation of o-phthalic acid or o-phthalic acid and trimellitic acid after their conversion to their respective intramolecular anhydrides and evaporation of such anhydrides and materials of lower boiling temperature from liquid effluents obtained by the liquid phase oxidation of o-xylene, or a combination of o-xylene and pseudocumene; which catalyst metal reclamation method comprises extracting such residue with water in a weight ratio of water to residue of from 0.35:1 up to 1.5:1 at a temperature in the range of from 70° to 100° C., then diluting the 70° to 100° C. temperature extract solution with water in an amount to precipitate 15 to 20% of the dissolved oxygen-containing compounds boiling higher than the anhydride of trimellitic acid before separating the solids insoluble from said extraction and thereafter cooling the resultant mixture of insolubles, precipitate and diluted extract solution to a temperature in the range of 20° C. to 35° C., or after said 70° C. to 100° C. extraction cooling the resultant mixture of insolubles and aqueous extract solution to a temperature in the range of 20° C. to 35° C. and then diluting the cooled extract solution with an amount of water to precipitate 15 to 20% of the dissolved oxygen-containing compounds boiling higher than the anhydride of trimellitic acid without by said dilution of the cooled solution causing a substantial temperature change from the cooling, and finally separating the solution containing catalyst metal from the insolubles and precipitates.

2. The metal of claim 1 wherein such residue so extracted is obtained from the dehydration and evaporation of liquid effluent from the neat oxidation of liquid o-xylene in the presence of catalysis provided by cobalt and manganese as metal oxidation catalysts promoted by bromine.

3. The method of claim 2 wherein the extraction is conducted at 77° C. with a water to residue weight ratio of 1:1 and the cooling and separating are conducted at a temperature of 21° to 24° C.

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ALKALINE DISHWASHER DETERGENT

Lawrence A. Gilbert, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 30, 1980, Ser. No. 164,710
Int. Cl.[3] **C11D** *7/56, 7/40*
U.S. Cl. 252—99 **9 Claims**

1. An automatic dishwashing composition providing optimum cleaning; spotting and filming; and physical characteristics consisting essentially of:

(1) from about 20% to about 60% of a detergency builder selected from the group consisting of alkali metal tripolyphosphates, pyrophosphates, orthophosphates, carbonates and mixtures thereof;

(2) from about 10% to about 30% alkali metal silicate solids providing from about 5% to about 15% of SiO_2;

(3) a material selected from the group consisting of sodium and potassium dichloroisocyanurates; dichloroisocyanuric acid; 1,3-dichloro-5,5-dimethylhydantoin; N,N'-dichlorobenzoylene urea; paratoluene sulfodichloroamide; trichloromelamine; N-chloroammeline; N-chlorosuccinimide; N,N'-dichloroazodicarbonamide; N-chloroacetyl urea; N,N'-dichlorobiuret; chlorinated dicyandiamide; sodium hypochlorite; calcium hypochlorite; lithium hypochlorite; chlorinated trisodium phosphate; and mixtures thereof; to provide available chlorine at a level of from about 0.5% to about 3%;

(4) from about 1% to about 9.5% of a low foaming nonionic surfactant; selected from the group consisting of

(a) the condensation product of 1 mole of a saturated or unsaturated, straight or branched chain alcohol or fatty acid containing from about 10 to about 20 carbon atoms with from about 4 to about 50 moles of ethylene oxide;

(b) polyethylene glycols having molecular weights of from about 1,400 to about 30,000;

(c) the condensation products of 1 mole of alkyl phenol wherein the alkyl chain contains from about 8 to about 18 carbon atoms and from about 4 to about 50 moles of ethylene oxide;

(d) polyoxypropylene, polyoxyethylene condensates having the formula

$$HO(C_2H_4O)_x(C_3H_6O)_y(C_2H_4O)_xH$$

where y equals at least 15 and $(C_2H_4O)_{x+x}$ equals 20% to 90% of the total weight of the compound and the molecular weight is from about 2,000 to about 10,000;

(e) the compounds of (a) which are capped with propylene oxide, butylene oxide, and/or short chain alcohols, and/or short chain fatty acids; and

(f) mixtures thereof;

(5) from about 1% to about 30% of a stabilized water-soluble polymer consisting essentially of polyacetal carboxylate segments having the structure

$$\left(\begin{array}{l}CHO\\ |\\ COOM\end{array}\right)_n,$$

wherein M is selected from the group consisting of alkali metal, ammonium tetraalkyl ammonium and alkanol amine groups having from 1 to about 4 carbon atoms in the alkyl and alkanol chains; n averages at least 4; and the total number of polyacetal carboxylate segments are at least 50% by weight of the total polymer;

said composition having a pH of from about 9 to 10.9 at 2,500

ppm and being substantially free of materials having a pH of 12 or more at a concentration of 1% in water and other organic chelating builders.

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TITANIUM TRICHLORIDE CATALYTIC COMPONENT AND METHOD FOR HOMO- OF CO-POLYMERIZATION OF α-OLEFIN

Yoichi Sunada, Shinnanyo; Yoshikazu Takahashi, Hikari, and Masaru Takitani, Shinnanyo, all of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1979, Ser. No. 106,243

Claims priority, application Japan, Nov. 26, 1979, 54-152818

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **11 Claims**

1. A titanium trichloride catalytic component for polymerization of α-olefin obtained in the following manner: separating said titanium trichloride catalytic component from a solution prepared by dissolving titanium tetrachloride, an organic ether compound and an organo-aluminum compound in a solvent, said solvent being a mixed solvent prepared by mixing 20 to 70% by volume of an aromatic hydrocarbon halide with a solvent consisting of saturated aliphatic hydrocarbon and/or alicyclic hydrocarbon; said organo-aluminum compound, said titanium tetrachloride and said organic ether compound being added to said mixed solvent at a solvent temperature not exceeding 55° C. and then, while raising the temperature of the resulting solution to a value between 45° and 150° C. said temperature is temporarily lowered by cooling to below 40° C.; and, at the time of cooling said solution the organic ether compound and/or titanium tetrachloride is further added; wherein the temporary cooling step is repeated at least twice to allow titanium trichloride catalytic component having an average particle diameter between 10 and 1000μ to separate out of said solution.

4,284,526

PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS, CATALYST EMPLOYED IN SAID PROCESS AND METHOD FOR THE PREPARATION THEREOF

Sebastiano Cesca, San Donato Milanese; Alberto Greco, Dresano; Guglielmo Bertolini, Pavia, and Mario Bruzzone, San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Division of Ser. No. 863,695, Dec. 23, 1977, which is a continuation of Ser. No. 568,169, Apr. 15, 1975, abandoned. This application May 12, 1980, Ser. No. 148,975

Claims priority, application Italy, Apr. 17, 1974, 21517 A/74

Int. Cl.³ C08F *4/02*

U.S. Cl. 252—429 C **9 Claims**

1. Catalyst for the polymerization of alpha-olefins consisting of

(a) A member of the group consisting of alkyl-halides, alkyl-derivatives and hydrides of the metals belonging to the first three groups of the Periodic System, and

(b) the combination product of titanium trichloride and a chloride of another transition metal, derived from the reaction of $TiCl_4$ and a carbonyl compound of said other transition metal, finely dispersed and carried on a material of high superficial area selected from the group consisting of the chlorinated oxides of the elements belonging to the 2nd to 4th groups of the Periodic System and which has been previously chlorinated.

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POLYMERIZATION CATALYST

Thomas J. Pullukat, Hoffman Estates, and Mitsuzo Shida, Barrington, both of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 916,807, Jun. 19, 1978. This application Oct. 24, 1979, Ser. No. 87,702

Int. Cl.³ C08F *3/04*

U.S. Cl. 252—430 **10 Claims**

1. A catalyst, prepared by the method comprising: preparing (1) a mixture by dispersing on a finely divided, difficult to reduce, inorganic support of the class consisting of silica, alumina, thoria, zirconia, titania, magnesia and mixtures thereof a tetravalent or lower valent organic chromium compound; (2) calcining (1) in air or inert atmosphere and at an elevated temperature of 80°–260° C. to bond the chromium compound on said support; (3) reacting the product of (2) with an alkyl ester of titanium, boron, vanadium or mixtures thereof or boric acid at an elevated temperature; and, immediately after (3) while avoiding any substantial contact with an inert gas, (4) activating the product of (3) with a dry gas that contains oxygen by heating at an elevated temperature said product of (3) in said gas.

4,284,528

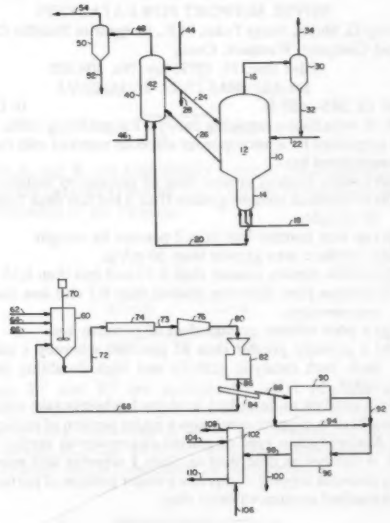
SYNTHETIC CO_2 ACCEPTOR

Michael S. Lancet, and George P. Curran, both of Pittsburgh, Pa., assignors to Conoco Inc., Stamford, Conn.

Division of Ser. No. 20,005, Mar. 12, 1979, Pat. No. 4,231,760. This application Feb. 25, 1980, Ser. No. 124,199

Int. Cl.³ B01J *27/20, 20/10, 20/04;* C10J *3/12*

U.S. Cl. 252—443 **5 Claims**



1. A synthetic CO_2 acceptor consisting essentially of at least one calcium compound selected from the group consisting of calcium oxide and calcium carbonate supported in a refractory carrier matrix, said carrier having the general formula $Ca_5(SiO_4)_2CO_3$, wherein said calcium compound is present in an amount up to about 50 weight percent, calculated as calcium oxide, based on the weight of the acceptor.

2. A method for producing a synthetic CO_2 acceptor, said

acceptor comprising a mixture of calcium carbonate and spurrite, $Ca_5(SiO_4)_2CO_3$ said method consisting essentially of:

(a) mixing calcium carbonate, silica and water to produce a pelletizable mixture containing from about 85 to about 90 weight percent calcium carbonate and from about 10 to about 15 weight percent silica;

(b) pelletizing said mixture to produce particles of a desired size; and

(c) heating said particles to a temperature of at least 1500° F. for at least 30 minutes at a steam pressure of at least about 18 atmospheres and a carbon dioxide pressure of at least 2 atmospheres to produce said synthetic CO_2 acceptor.

5. The method of claim **2** wherein said synthetic CO_2 acceptor of step (c) is further heated in the presence of finely divided silica at a temperature from about 1450° to about 1600° F. at a carbon dioxide pressure of at least 2 atmospheres to further harden said synthetic CO_2 acceptor particles.

4,284,529

HYDROCARBON CONVERSION CATALYST

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,793
Int. Cl.³ B01J *29/28*
U.S. Cl. 252—455 Z **8 Claims**

1. A catalyst composition comprising an inorganic matrix and from 10 to 90 wt.% of the alkali metal form of a steamed crystalline zeolite having a silica/alumina ratio above 12, a constraint index between about 1 and about 12, and an alpha value not less than about 5, said catalyst having substantially no activity for cracking n-hexane.

4. The catalyst composition described in claim **1** or **2** including a hydrogenation metal.

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NOVEL SUPPORT FOR CATALYSTS

Fawzy G. Sherif, Stony Point, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 17, 1979, Ser. No. 104,330
Int. Cl.³ B01J *23/22, 21/16, 21/12*
U.S. Cl. 252—455 R **10 Claims**

1. A vanadium-containing catalyst for oxidizing sulfur dioxide supported by a microporous siliceous material said support characterized by:

(a) a silica content greater than 85 percent by weight;

(b) an alumina content greater than 3 but less than 5 percent by weight;

(c) an iron content less than 2 percent by weight;

(d) a surface area greater than 10 m^2/g;

(e) a bulk density greater than 0.10 and less than 0.35 g/cc;

(f) a mean pore diameter greater than 0.3 and less than 2.5 micrometers;

(g) a pore volume greater than 65 percent; and

(h) a porosity greater than 65 percent; whereby a catalyst with high catalytic activity and high durability is provided.

3. A catalyst as described in claim **1** wherein said microporous siliceous support comprises a major portion of particles of the Actinoptychus type of marine diatomaceous earth.

5. A catalyst as described in claim **1** wherein said microporous siliceous support comprises a major portion of particles of acid-leached montmorillonite clay.

4,284,531

METHANATION CATALYSTS AND PROCESS FOR THEIR PREPARATION

Howard D. Simpson; Hugh W. Gowdy, both of Irvine, and Steven D. Light, Fullerton, all of Calif., assignors to Union Oil Co. of California, Brea, Calif.

Filed Sep. 5, 1979, Ser. No. 72,662
Int. Cl.³ B01J *21/04, 23/64, 23/84, 23/86*
U.S. Cl. 252—465 **19 Claims**

1. A methanation catalyst suitable for use in the synthesis of synthetic fuel gas from liquid hydrocarbons, said methanation catalyst comprising an interspersed mixture of metals selected from Groups IV(B), V(B), or VI(B), in combination with two Group VIII metals, composited with an inorganic refractory oxide support or matrix; said methanation catalyst having an average pore diameter of from about 60 Å to about 400 Å; a surface area ranging from about 50 M^2/g to about 500 M^2/g; a pore volume of from about 0.2 cc/g to about 0.8 cc/g; a compacted bulk density of from about 0.6 to about 1.2; and wherein said catalyst comprises either Group IV(B), V(B) or VI(B) metals or a mixture thereof; combined with two Group VIII metals; and an inorganic refractory oxide support or matrix in a molar ratio range of from about 10:20:70 to about 1:1:98.

4,284,532

STABLE LIQUID DETERGENT COMPOSITIONS

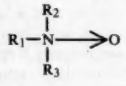
John W. Leikhim; James M. Gajewski, and Maryann Kuzel, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 11, 1979, Ser. No. 83,907
Int. Cl.³ C11D *1/34, 1/68, 1/75, 17/08*
U.S. Cl. 252—528 **1 Claim**

1. A stable liquid detergent comprising:

(a) about 11.5% of an ethoxylated alcohol nonionic surfactant of the formula $R(C_2H_4O)_nOH$ wherein R is an aliphatic hydrocarbyl radical containing from about 12 to about 13 carbon atoms, wherein the average n is about 6.5, said surfactant having an HLB value of from about 10 to about 13;

(b) about 6.7% of an amine oxide surfactant having the formula



wherein R_1 is an alkyl radical containing from about 12 to about 16 carbon atoms and R_2 and R_3 are methyl;

(c) (i) about 5% of a water-soluble salt of citric acid; (ii) about 7% of a water-soluble salt of pyrophosphoric acid, and

(d) about 12% of a hydrophilic material selected selected from the group consisting of monoalkyl esters of phosphoric acid, ethoxylated monoalkyl esters of phosphoric acid and mixtures thereof, said hydrophilic material having an HLB value above about 14; and

(e) about 46% water.

4,284,533

LIQUID ABRASIVE-CONTAINING CLEANSER COMPOSITION

Tetsuya Imamura, Tokyo, and Ryozi Shiozaki, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 957,164, Nov. 2, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 130,765
Claims priority, application Japan, Nov. 28, 1977, 52-143042
Int. Cl.³ C11D *1/72, 3/14*
U.S. Cl. 252—542 **11 Claims**

1. A liquid abrasive cleanser composition consisting essentially of:

(a) 0.1 to 0.6 wt. % of cross-linked polyacrylic acid having an average degree of polymerization of 10^3 to 10^5 and a Brookfield yield value of at least about 100 g/sec.cm., said cross-linked polyacrylic acid having been prepared by copolymerizing acrylic acid or methacrylic acid with triallyl isocyanurate,

(b) 1 to 10 wt. % of hydrotrope of formula (I) or formula (II):

ROH (I)

wherein R is alkyl having 1 to 3 carbon atoms, or

$$R'—O—(R''O)_nH \quad (II)$$

wherein R' is hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or benzyl, R'' is ethylene, propylene or mixture thereof, and n is the average addition mole number with the provisos that n is 1 to 20 when R' is hydrogen and n is 1 to 3 when R' is a group of other than hydrogen,

(c) 0.5 to 10 wt. % of nonionic synthetic organic surfactant having an HLB of 10 to 17,

(d) 7 to 20 wt. % of water-insoluble abrasive having a particle size of from about 2 to about 150 microns, and the balance of the composition is essentially water and a water-soluble pH regulator in an amount effective to maintain the composition at a pH of 6 to 8.

4,284,534

AQUEOUS BUBBLE BLOWING COMPOSITION

Joseph R. Ehrlich, New York, N.Y., assignor to Jack S. Wachtel, Larchmont, N.Y., a part interest

Continuation-in-part of Ser. No. 26,527, Apr. 3, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,424

Int. Cl.³ C11D 1/20; B01J 13/00

U.S. Cl. 252—542 **11 Claims**

1. A non-toxic, non-eye-irritating bubble composition, consisting essentially of an aqueous solution of from about 2.0 to about 6% by weight of lauric diethanolamide, from about 1.0 to about 3% by weight of an alkanolamido half ester of a sulfosuccinic acid salt as surfactant, from about 0.05 to about 6% of a water-soluble film-forming agent selected from the group consisting of polyvinylpyrrolidone, polyethylenoxide, polyvinylalcohol, a cellulose and gelatin, the weight ratio of said lauric diethanolamide to said surfactant on a dry basis being from about 1.7:1 to about 2.4:1, from 0 to about 10% by weight of glycerin, and the balance water.

4,284,535

RUBBER COMPOSITES SUITABLE FOR TIRE SIDEWALLS FROM HEXADIENE POLYMER

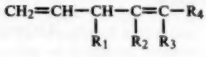
Joginder Lal, Akron, Ohio, and Paul H. Sandstrom, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 948,293, Oct. 5, 1978, Pat. No. 4,240,487, which is a continuation of Ser. No. 728,482, Sep. 30, 1976, abandoned. This application May 9, 1980, Ser. No. 148,318

Int. Cl.³ C08L 7/00, 9/00

U.S. Cl. 260—4 R **7 Claims**

1. An elastomeric composition consisting essentially of, based on 100 parts by weight rubber (A) about 15 to about 60 parts by weight of rubbery polymer of at least one nonconjugated diolefin having the formula:



where R_1, R_2 and R_3 are hydrogen, a lower alkyl group containing up to 4 carbon atoms or an aryl group, and R_4 is a lower alkyl group containing up to 4 carbon atoms or an aryl group, (B) about 85 to about 40 parts by weight of high unsaturation rubber selected from the group consisting of at least one of natural high cis-1,4-polyisoprene rubber, synthetic high cis-1,4-polyisoprene, high cis-1,4-polybutadiene, butadiene/styrene rubber and polyalkenylenes and (C) 0 to about 40 parts by weight of at least one low unsaturation rubber selected from an EPDM and halobutyl rubber, where said EPDM rubber is an ethylene-propylene-nonconjugated diene terpolymer containing from about 20 to about 75 weight percent units derived from ethylene, from about 80 to 25 weight percent units derived from propylene, and a minor proportion of from about 1 to 15 weight percent units derived from a C_5–C_{30} nonconjugated diene and where said halobutyl rubber is a chlorinated or brominated butyl rubber prepared by copolymerization of isobutylene and isoprene to form a butyl-type rubbery copolymer containing about 95 to about 98 weight percent isobutylene and, correspondingly, about 5 to about 2 weight percent isoprene and then chlorinating or brominating said copolymer to form the halobutyl rubber containing about 0.5 to about 2.0 weight percent chlorine or bromine and about 0.5 to about 3.5 mole percent unsaturation expressed in units of carbon-to-carbon double bonds per kilogram of polymer.

4,284,536

COMPOSITION FOR ADHESION OF RUBBER TO REINFORCING MATERIALS

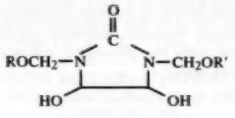
Rao S. Bezwada, Somerville, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Filed Jun. 23, 1980, Ser. No. 161,954

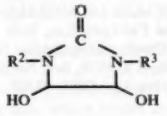
Int. Cl.³ C08L 7/00, 9/00, 9/06, 61/24

U.S. Cl. 260—4 AR **10 Claims**

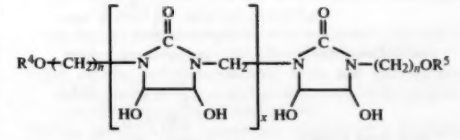
1. A vulcanizable rubber composition consisting essentially of (A) a rubber comprising natural rubber, polybutadiene, polyisoprene, ethylenepropylene terpolymer rubber, butadiene-styrene copolymer rubber, butadiene-acrylonitrile copolymer rubber, chloroprene rubber, chlorosulfonated polyethylene or a mixture thereof; (B) a sulfur vulcanizing agent; and (C) from about 1 to 10 parts by weight, per hundred parts by weight of rubber, of a compound selected from the group consisting of (1) compounds of the formula:



wherein R and R' are individually lower (C_1–C_4) alkyl, aryl (C_6–C_{10}) or cycloalkyl having 5 or 6 carbon atoms in the ring; (2) compounds of the formula:



wherein R^2 and R^3 are individually alkyl (C_1–C_8) aryl (C_6–C_{10}), cycloalkyl having 5 or 6 carbon atoms in the ring, cyano, carboxy, carboalkoxy, amido or dialkylamido substituted lower (C_1–C_4) alkyl or hydroxy substituted lower (C_2–C_4) alkyl; or (3) compounds of the formula:



wherein R^4 and R^5 are, individually, hydrogen, lower (C_1–C_4) alkyl, or cycloalkyl having 5 or 6 carbon atoms in the ring; n is an integer from 1 to 4, inclusive, and x is 1 or 2.

4,284,537

CONJUGATE OF STREPTOCOCCAL M PROTEIN PEPTIDE VACCINE

Edwin H. Beachey, Memphis, Tenn., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 3, 1980, Ser. No. 165,619
Int. Cl.[3] **A61K** *39/07, 39/385, 39/40, 39/44*
U.S. Cl. 260—6 **6 Claims**

1. The conjugation of M24 protein particle CB6 or CB7 with polylysine which produces a conjugation antisera against animal streptococcus infection.

4,284,538

SIZING COMPOSITION FOR GLASS FIBERS

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 21, 1979, Ser. No. 50,561
Int. Cl.[3] **C03C** *25/02;* **C08L** *3/02*
U.S. Cl. 260—17.4 ST **18 Claims**

1. A sizing composition for glass fibers useful in rendering sized glass fibers with improved water dispersibility, comprising:

about 0.1 to about 1.5 weight percent of the aqueous sizing composition of an aqueous emulsion mixture of cationic imidazoline; an aliphatic, aromatic or polymeric ester; and a polyethylene when the mixture is around 30 percent active.

12. In the method of forming chopped glass fiber strand for dispersion in a slush for producing glass paper, which comprises drawing glass streams through orifices in a bushing to form individual glass fibers, moving the fibers away from the bushing, chopping the fiber, applying to the fibers while they are moving and before they are chopped an aqueous sizing solution, comprising 0.1 to about 1.5 weight percent of the sizing composition being an aqueous emulsion having a cationic imidazoline, an aliphatic, aromatic, or polymeric ester; and polyethylene with the remaining amount of the sizing composition being water.

4,284,539

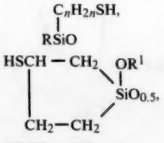
COMPOSITIONS INCLUDING MERCAPTOORGANOPOLYSILOXANES, ALIPHATICALLY UNSATURATED POLYDIORGANOSILOXANES AND CARBOXYLIC ACID SALTS OF METALS

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

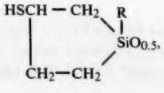
Filed Dec. 3, 1979, Ser. No. 99,257
Int. Cl.[3] **C08L** *91/00*
U.S. Cl. 260—18 S **6 Claims**

1. A composition of matter comprising a material prepared by mixing

(A) a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, hydroxydimethylsiloxane units, trimethylsiloxane units, units of the formula



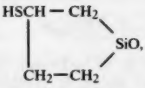
units of the formula



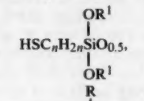
units of the formula

-continued

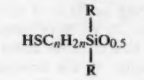
units of the formula



units of the formula



and units of the formula

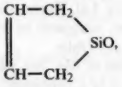


wherein: R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radical; R^1 is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive; and n has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of at least two sulfur-containing siloxane units per molecule, but not more than 10 mole percent sulfur containing units based upon the total number of siloxane units in the mercaptoorganopolysiloxane;

(B) an aliphatically unsaturated polydiorganosiloxane having at least three diorganosiloxane units per molecule wherein each unit of the combination forming the molecule is selected from the group consisting of units of the formula

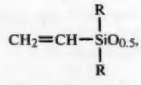
units of the formula

and units of the formula

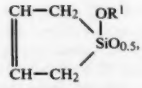


any endblocking units present being selected from the group consisting of units of the formula

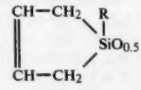
units of the formula



units of the formula



and units of the formula



wherein R and R^1 are as defined above, there being at least two aliphatically unsaturated siloxane units per molecule;

(C) an organic peroxide in an amount equal to from about 0 to about 10 parts by weight per 100 parts of the combined weight of (A) and (B);

(D) a filler in an amount equal to from about 0 to about 200 parts by weight per 100 parts of the combined weight of (A) and (B); and

(E) a carboxylic acid salt of a metal selected from the group consisting of iron, manganese and nickel in an amount equal to from about 0.01 to about 5 parts by weight per 100 parts of the combined weight of (A) and (B).

4,284,540

POLYETHYLENE TEREPHTHALATE MOLDING COMPOSITIONS

Hiroshi Iida; Kiichi Kometani, and Masana Yanagi, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 16, 1980, Ser. No. 140,886

Claims priority, application Japan, Apr. 17, 1979, 54-46018

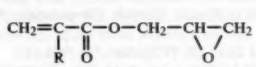
Int. Cl.³ C08L *63/00, 67/00*

U.S. Cl. 260—22 R **13 Claims**

1. Polyethylene terephthalate molding compositions which comprise

(a) polyethylene terephthalate having an intrinsic viscosity of at least 0.4 as measured at 1% concentration in o-chlorophenol at 25° C.,

(b) from 0.1 to 40 parts by weight, based on 100 parts by weight of polyethylene terephthalate, of a copolymer of an α-olefin, and a glycidyl ester of α,β-unsaturated-aliphatic carboxylic acid having the general formula



(I)

wherein R is hydrogen or a lower alkyl radical, and

(c) from 0.1 to 5 parts by weight, based on 100 parts by weight of polyethylene terephthalate, of the barium salt of a fatty acid having 8 to 33 carbon atoms.

4,284,541

HOT-MELT PRESSURE SENSITIVE ADHESIVE COMPOUND

Masami Takeda, Iwakuni, and Riichiro Nagano, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,497

Claims priority, application Japan, Nov. 14, 1978, 53-139358

Int. Cl.³ C08L *51/04, 51/06*

U.S. Cl. 260—27 R **22 Claims**

1. A hot-melt pressure sensitive adhesive compound consisting essentially of:

(a) 30 to 70% by weight of a modified ethylene.α-olefin copolymer rubber containing from 40 to 85 mol % of ethylene units, having a melt index of 5 to 500 and prepared by grafting an unsaturated carboxylic acid or derivative thereof to an ethylene.α-olefin copolymer rubber or a partial ester of said modified copolymer rubber, and

(b) 70 to 30% by weight of a tackifier selected from the group consisting of aliphatic, aromatic alicyclic and copolymer type petroleum resins, terpene resin, rosin and cumarone-indene resin.

4,284,542

HOT MELT ADHESIVE COMPOSITION

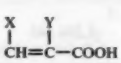
Richard J. Boyce, Glen Farms, Md., and Terence A. Cooper, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 36,539, May 7, 1979, abandoned. This application Apr. 7, 1980, Ser. No. 132,499

Int. Cl.³ C08L *93/00*

U.S. Cl. 260—27 R **9 Claims**

1. Masterbatch compositions suitable for preparing adhesive and sealant compositions, said masterbatch compositions consisting essentially of an alkali metal ionomer of a random copolymer of ethylene, methyl acrylate, and at least one carboxylated termonomer of the general formula



where X is H or COOR or COOH,

where Y is H or Me, and

where R is alkyl of 1–6 carbon atoms, an inorganic filler, and 0.05–10 phr of an ammonium polyphosphate having the general formula

$$H_{(n-m)+2}(NH_4)_mP_nO_{3n+1}$$

wherein n is an integer having a number average value greater than 10, m/n has an average value between about 0.7 and about 1.1, and m has a maximum value equal to n+2.

4,284,543

EXTENDING THE MOLTEN STABILITY OF POLY (ETHYLENE-VINYL ACETATE) HOT-MELT ADHESIVES BY ADDITION OF LITHIUM METAL ION

Samuel D. Hollis, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Sep. 2, 1980, Ser. No. 183,354

Int. Cl.³ C08L *23/26, 31/04*

U.S. Cl. 260—27 EV **9 Claims**

1. A method of increasing the molten stability of ethylene-vinyl acetate copolymer hot-melt adhesive compositions containing hydrocarbon resin tackifier and at least one antioxidant compound, which comprises; mixing with said compositions a stabilizing proportion of a soluble lithium metal ion.

4,284,544

PROCESS FOR THE PREPARATION OF WATER-DISPERSIBLE OR WATER-SOLUBLE BLOCKED POLYISOCYANATES, THE BLOCKED POLYISOCYANATES OBTAINABLE BY THIS PROCESS AND LACQUER BINDERS CONTAINING THESE BLOCKED POLYISOCYANATES AS ISOCYANATE COMPONENT

Christian Wegner, Cologne; Kurt Findeisen, Odenthal, and Franz Weider, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,059

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853937

Int. Cl.³ C08L *75/06*

U.S. Cl. 260—29.2 TN **8 Claims**

1. A binder for coating compounds which is to be applied from the aqueous phase, which binder contains a polyisocyanate component and a polyhydroxyl component and is optionally dispersed in water or partly dispersed and partly dissolved, characterized in that:

(1) the polyisocyanate component consists of a water-dispersible or water-soluble blocked polyisocyanate obtainable by a process comprising reacting a polyisocyanate which is neither soluble nor dispersible in water with

(a) a blocking agent, such that 50 to 99.8% of the isocyanate groups are blocked, and either

(b) organic polyaminosulfonates in an amount sufficient to render the polyisocyanate dispersible or soluble, or

(c) organic polyaminosulfonic acids and subsequently neutralizing sufficient acid groups to render the polyisocyanate dispersible or soluble; and

(2) the polyhydroxyl component consists of a polyester polyol which is neither dispersible nor soluble in water and/or a polyhydroxy polyacrylate which is neither dispersible nor soluble in water;

the above-mentioned components being present in such pro-

portions that from 0.5 to 2 equivalents of hydroxyl groups are available per equivalent of blocked isocyanate groups.

4,284,545

COMPOSITION AND PROCESS FOR MAKING PRECIPITATED NYLON-POLYVINYL ALCOHOL BICONSTITUENT COMPOSITION

Neal E. Franks, Suffern, N.Y., and Julianna K. Varga, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 938,907, Sep. 1, 1978, Pat. No. 4,196,282, which is a continuation-in-part of Ser. No. 854,957, Nov. 25, 1977, Pat. No. 4,145,532. This application Jul. 2, 1979, Ser. No. 54,359

Int. Cl.[3] **C08L** *29/04, 77/06*

U.S. Cl. 260—29.6 NR **14 Claims**

1. A biconstituent dispersion comprising:

(A) a first distinct phase comprising a solution of

(1) a nylon having an amide group index (molecular weight of repeating unit ÷ number of amide groups per repeating unit) or less than 145,

(2) a tertiary amine oxide nylon solvent which has an N-methylamine oxide group endo or exo to an aromatic or saturated or unsaturated ring and which has substantial stability at about 125° C., and

(3) a nylon solubility enhancing amount of water, and

(B) a second distinct phase comprising a solution of

(1) polyvinyl alcohol

(2) a tertiary amine oxide polyvinyl alcohol solvent, and

(3) a polyvinyl alcohol solubility enhancing amount of water.

4,284,546

COATING SUBSTANCES WITH A HIGH CONCENTRATION OF SOLIDS, FOR COATED PAPERS

Pierre Delfosse, Paris, France, and Dieter Strauch, Zofingen, Switzerland, assignors to Omya S. A., Paris, France

Filed Oct. 29, 1979, Ser. No. 88,799

Claims priority, application France, Oct. 30, 1978, 78 30723

Int. Cl.[3] **B05D** *3/02, 3/12;* **B32B** *23/08, 27/10*

U.S. Cl. 260—29.6 R **3 Claims**

1. A paper coating substance having a high solids content and containing natural calcium carbonate as substantially the only pigment; said calcium carbonate being in an aqueous form comprising 79.3% by weight of calcium carbonate; said aqueous calcium carbonate having a pH of about 9.5; all of the calcium carbonate particles being smaller than 2 μm; 82.5% by weight of said calcium carbonate particles being smaller than 1 μm; 14% by weight of said calcium carbonate particles being smaller than 0.2 μm; said coating substance containing a synthetic binder consisting essentially of a styrene-acrylate latex in an amount of 12 parts by weight per 100 parts by weight of said calcium carbonate calculated dry; the concentration of solids in said coating substance comprising about 72% by weight.

4,284,547

WATER-IN-RESIN EMULSIONS CONTAINING POLYESTER RESINS

Richard C. Sulick, 3821 Dill Rd., Drayton Plains, Mich. 48020

Filed Jun. 26, 1980, Ser. No. 163,261

Int. Cl.[3] **C08L** *67/06*

U.S. Cl. 260—29.6 NR **3 Claims**

1. A water in resin emulsion comprising a mixture of water dispersed in discrete droplets in a continuous phase of a resinous, copolymerizable composition including:

(a) a copolymerizable mixture containing a liquid unsaturated polyester of a polyhydric alcohol and saturated and ethylenically unsaturated dicarboxylic acids and a compound having a polymerizable $CH_2{=}C$ group, said copolymerizable mixture having a molecular weight in the range of from about 2500 to about 3500;

(b) a cobalt salt promoter for promoting the cure of said copolymerizable mixture, present in an amount in the range of from about 0.25 to about 1.5% based on the weight of said copolymerizable mixture and a 12% cobalt content in said salt;

(c) a tertiary aromatic amine accelerator for accelerating said promoter, present in an amount in the range of from about 0.75 to about 1.75% based on the weight of said copolymerizable mixture; and,

(d) a lithium salt emulsifier for insuring the stability of an emulsion of water in said copolymerizable mixture upon agitation thereof, present in an amount in the range of from about 0.5 to about 1.5% based on the weight of said copolymerizable mixture and a 2% lithium content in said salt.

4,284,548

AMBIENT TEMPERATURE CURABLE HYDROXYL CONTAINING POLYMER/SILICON COMPOSITIONS

Lawrence G. Kaufman, North Bergen; Charles N. Merriam, Martinsville, both of N.J., and Enrico J. Pepe, Amawalk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,614

Int. Cl.[3] **C08F** *8/32, 8/42;* **C08C** *19/00*

U.S. Cl. 260—38 **43 Claims**

1. A substantially anhydrous, acid-free, room temperature curable composition which comprises

(A) an organic thermoplastic polymer containing at least two hydroxyl radicals which are directly bonded to non-carboxylic carbon atoms of said polymer; and

(B) a hydrolyzable aminoorganosilicon acylamino compound having the formula

$$X_{3-a}\overset{\displaystyle R_a^1}{\overset{|}{Si}}-RN(R^2N)_t\overset{\displaystyle R^3}{\overset{|}{C}}H\overset{\displaystyle Q}{\overset{|}{C}}H\overset{\displaystyle Q}{\overset{|}{C}}\overset{\displaystyle O}{\overset{\|}{C}}NH-(R^2N)_x\overset{\displaystyle R^3}{\overset{|}{R^4}}$$

and mixtures thereof, wherein:

X is an alkoxy radical having 1 to 6 carbon atoms; R is a divalent alkylene radical having 1 to 4 carbon atoms; R^1 is hydrogen or an alkyl radical having 1 to 4 carbon atoms; R^2 is a divalent alkylene radical having 2 to 4 carbon atoms; R^3 is a radical selected from the group consisting of hydrogen, an alkyl radical having 1 to 20 carbon atoms or a phenyl radical; R^4 is a radical selected from the group consisting of an alkyl radical having 1 to 20 carbon atoms, a phenyl radical or a silyl radical of the formula:

$$-R-\overset{\displaystyle R_a^1}{\overset{|}{Si}}-X_{3-a}$$

wherein X, R and R^1 are the same as defined above; Q is a radical selected from the group consisting of hydrogen, an alkyl radical of 1 to 4 carbon atoms, a phenyl radical or an ester radical of the formula $-COOR^5$ wherein R^5 is an alkyl radical having 1 to 4 carbon atoms; and wherein a has a value of 0 to 2 and t and x each have a value of 0 to 4, with the proviso that when x is at least 1, R^4 can also be hydrogen; and wherein said composition contains about 5 to 50 parts by weight of said hydrolyzable silicon compound (B) per 100 parts by weight of said organic polymer (A).

4,284,549

POLYMER BLENDS WITH IMPROVED HYDROLYTIC STABILITY

Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 905,623, May 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 863,555, Dec. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 819,539, Jul. 27, 1977, abandoned. This application May 28, 1980, Ser. No. 154,174

Int. Cl.[3] **C08L** *67/02, 81/04;* **C08K** *7/14*

U.S. Cl. 260—40 R **22 Claims**

1. A thermoplastic polymeric composition having improved hydrolytic stability comprising, in admixture, (a) a linear aromatic polyester of components comprising a bisphenol and a dicarboxylic acid, and (b) polyphenylene sulfide.

14. The composition of claim **1** wherein the filler material is glass fiber present in an amount of about 5 to about 70 weight percent based on the combined weight of the polyester and the phenylene sulfide polymer.

4,284,550

FLAME RETARDING RESIN COMPOSITION

Shioji Mizuno, Osaka; Norio Enokimoto, Izumi, and Kazuyoshi Oji, Takaishi, all of Japan, assignors to Dainippon Ink and Chemicals Inc., Tokyo, Japan

Continuation of Ser. No. 52,448, Jun. 26, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 184,159

Claims priority, application Japan, Jun. 30, 1978, 53-78529

Int. Cl.[3] **C08K** *7/14, 3/30*

U.S. Cl. 260—40 R **16 Claims**

1. A flame-retarding resin composition comprising (1) polybutylene terephthalate, (2) an organohalogen compound as a flame-retarding agent, (3) a flame-retarding supplementary agent, (4) calcium sulfate, and (5) glass fiber reinforcing agent, and (6) at least one polymer selected from a saponified polyvinyl acetate having a saponification degree of greater than 50 mole%, an ethylene/vinyl acetate copolymer, and a saponified ethylene/vinyl acetate copolymer.

4,284,551

TERTIARY AROMATIC AMINE ACCELERATORS DERIVED FROM PARA-AMINOPHENETHANOL

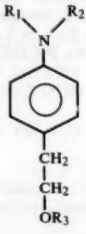
Harold Argentar, Rockville, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Filed Nov. 30, 1979, Ser. No. 98,886

Int. Cl.[3] **C08K** *5/18;* **C08F** *2/44;* **C08G** *63/46*

U.S. Cl. 260—42.43 **12 Claims**

1. A composition of matter comprising (1) a component selected from the group consisting of polymerizable vinyl monomers and unsaturated polyesters, (2) a peroxide catalyst, and (3) a tertiary aromatic amine having the following structure:

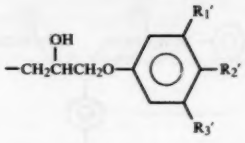


(A)

where R_1 and R_2 are the same or different and are selected from the following groups:

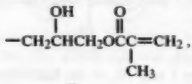
(a) $-CH_3$,

(b) $-CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,

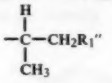


(c)

where R_1', R_2' and R_3' are each either hydrogen, normal alkyl, $-C_nH_{2n+1}$, with n varying between 1 and 20, or t-butyl, but if one R' is t-butyl, then the adjacent R' is hydrogen,



(d)

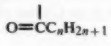


(e)

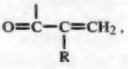
where R_1'' is $-C_nH_{2n+1}$ with n varying from 0 to 17, or

(f) $-CH_2CH_2OH$;

and where R_3 is either hydrogen, or a lower normal alkanoyl group,

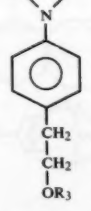


with n varying between 1 and 20, or

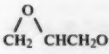


wherein R is hydrogen or a methyl group; or

(B) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine



in which R_1 and R_2 are each hydrogen and R_3 is as defined in (A), with the diglycidyl ether of bisphenol A, viz.,



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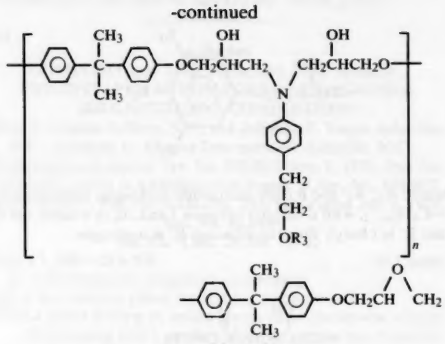
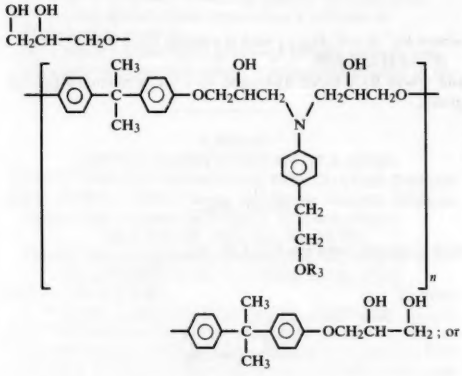
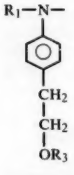
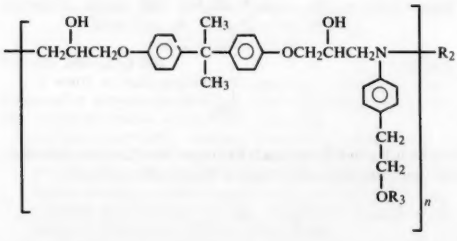


where n varies between 1 and 10, or the hydrolysis product of this polymeric amine, viz.,

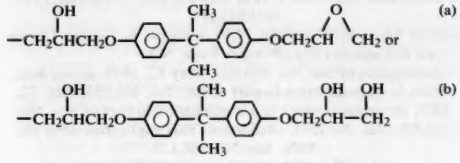


(C) an amine having the formula





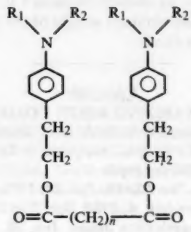
with n varying between 1 and 10, where R_1 and R_2 are as defined in (A) or are of the formula



and where R_3 is as defined in (A); or

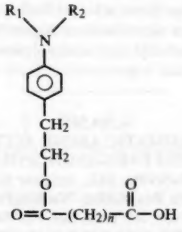
(D) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (B) with methacrylic or acrylic acid; or

(E) an amine having the formula



where R_1 and R_2 are as defined in (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1 and R_2, and where n varies between 2 and 10; or

(F) an amine having the formula



where R_1 and R_2 are as defined in (A), and where n varies between 2 and 10.

4,284,552

PROCESS FOR THE PREPARATION OF COA-SPC FROM BAKERS' YEAST

Edsel T. Bucovaz; John C. Morrison; Walter D. Whybrew, and Stanley J. Tarnowski, Jr., all of Memphis, Tenn., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 900,125, Apr. 26, 1978. This application Jul. 17, 1979, Ser. No. 58,143

Int. Cl.[3] **C07G** *7/00*

U.S. Cl. 260—112 R **18 Claims**

1. A process for preparing CoA-SPC Bakers' yeast extract which comprises:

lysing Bakers' yeast cells;

separating the Bakers' yeast cell lysate into solid and supernatant fractions wherein said solid fraction is substantially free of t-factor;

treating said solid fraction to solubilize insoluble proteinaceous material other than the insoluble CoA-SPC;

separating said solubilized proteinaceous materials from the fraction containing said insoluble CoA-SPC;

contacting said fraction containing said insoluble CoA-SPC

with said supernatant fraction containing t-factor to produce soluble CoA-SPC; and

wherein said t-factor is characterized by that fraction of Bakers' yeast having a molecular weight of 400 to 1000 and which solubilizes insoluble CoA-SPC in the presence of chloride ions.

4,284,553

REVERSIBLE METHOD FOR COVALENT IMMOBILIZATION OF BIOCHEMICALS

Rodney J. Brown, Logan, Utah; Harold E. Swaisgood, and Horace R. Horton, both of Raleigh, N.C., assignors to North Carolina State University at Raleigh, Raleigh, N.C.

Filed Jun. 20, 1980, Ser. No. 161,645

Int. Cl.[3] **C09C** *3/08, 3/10, 3/12;* **C12N** *9/96*

U.S. Cl. 260—112 R **10 Claims**

1. A reversible method for the covalent immobilization of proteins which comprises:

a. treating an inorganic oxide material to provide an activated surface thereon by the steps of:

i. silanizing and succinylating the inorganic oxide material to provide a succinamidopropyl-surface;

ii. converting the succinamidopropyl-surface to the acyl chloride derivative by treatment with thionyl chloride under anhydrous conditions; and

iii. reacting the acyl chloride derivative with either 3-mercaptopropionic acid or mercaptoacetic acid under anhydrous conditions, whereby the surface of said inorganic oxide material is activated; and

b. contacting the activated surface with protein having a reactive amino group whereby said protein is covalently bonded to the activated surface.

4,284,554

MONOAZO COMPOUNDS HAVING A 6-(2'-N-ALKYLANILINO--4-CHLORO-1',3',5'-TRIAZINYL-6'-AMINO OR ALKYLAMINO)-1-HYDROXY-3-SULFONAPHTHALENE COUPLING COMPONENT RADICAL

Paul Doswald, Münchenstein, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

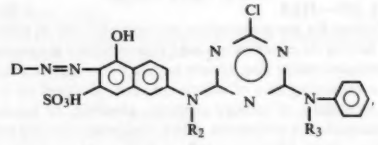
Filed Dec. 18, 1978, Ser. No. 970,348

Claims priority, application Switzerland, Dec. 23, 1977, 15955/77

Int. Cl.[3] **C09B** *29/00*

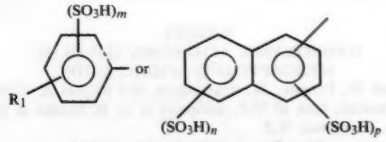
U.S. Cl. 260—153 **16 Claims**

1. A compound of the formula



or a salt thereof each cation of which is non-chromophoric, wherein

D is



wherein

R_1 is hydrogen, C_{1-4}alkyl or C_{1-4}alkoxy,

m is 1 or 2,

n is 1 or 2, and

p is 0 or 1,

with the proviso that n+p is 2 or 3,

R_2 is hydrogen or C_{1-4}alkyl, and

R_3 is C_{1-4}alkyl,

or a mixture of such compounds in free acid or salt form.

4,284,555

7-CHLORO-8(SUBSTITUTED AMINO CARBONYLOXY)-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

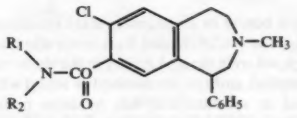
Elijah H. Gold, West Orange, and Wei K. Chang, Livingston, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Apr. 27, 1979, Ser. No. 34,055

Int. Cl.[3] **C07D** *223/16;* **A61K** *31/55*

U.S. Cl. 260—239 BB **6 Claims**

1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof wherein R_1 and R^2 are members of the group consisting of hydrogen, alkyl, methoxyalkyl, and hydroxy alkyl wherein the alkyl and alkoxy groups have 1 to 6 carbon atoms.

4,284,556

7,8-AMINO, HYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

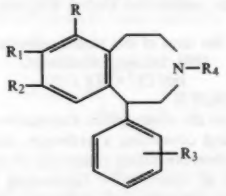
Kenneth G. Holden, Haddonfield; Carl Kaiser, Haddon Heights, both of N.J., and Joseph Weinstock, Phoenixville, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Jan. 31, 1980, Ser. No. 117,181

Int. Cl.[3] **C07D** *223/16;* **A61K** *31/55*

U.S. Cl. 260—239 BB **9 Claims**

1. A compound of the formula:



in which:

R is hydrogen, halo or lower alkyl of 1–3 carbons;

R_1 and R_2 are hydroxy, amino, acetamido or methylsulfonamido with the proviso that one of R_1 and R_2 is always hydroxy and R_1 and R_2 are not both hydroxy;

R_3 is hydrogen, halo, methyl, methoxy, methylthio or hydroxy; and

R_4 is hydrogen, allyl or methyl; together with pharmaceutically acceptable, acid addition salts thereof.

4,284,557

INTERMEDIATE RACEMATES FOR THE PREPARATION OF BIOTIN AND A PROCESS FOR THEIR PREPARATION

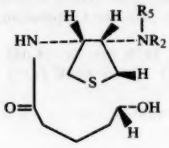
Enrico G. Baggiolini, Bloomfield; Hsi L. Lee, West Paterson, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 43,282, May 29, 1979, Pat. No. 4,247,704, which is a continuation-in-part of Ser. No. 965,660, Dec. 1, 1978, Pat. No. 4,245,104, which is a continuation-in-part of Ser. No. 822,119, Aug. 5, 1977, Pat. No. 4,130,713. This application May 15, 1980, Ser. No. 150,116

Int. Cl.[3] C07D *513/08, 513/06*

U.S. Cl. 260—239.3 B 7 Claims

1. The racemate of a compound of the formula:



VIII'-IX'

wherein R_2 is benzyl or alpha-lower alkyl substituted benzyl, R_5 is hydrogen or —$COOR_4$ and R_4 is lower alkyl, aryl or aryl (lower) alkyl, wherein the aryl moiety in the above substituents is phenyl, napthyl, anthryl, phenanthryl or azulyl which can be unsubstituted or substituted in one or more positions with halogen, nitro, lower alkylenedioxy, lower alkyl or lower alkoxy.

4,284,558

CHEMICAL PROCESS FOR FLUORINATING A TERTIARY CARBON ATOM IN THE STEROID NUCLEUS

Derek H. R. Barton, London, England, and Robert H. Hesse, Cambridge, Mass., assignors to Research Institute for Medicine and Chemistry, Inc., Cambridge, Mass.

Continuation of Ser. No. 581,283, May 27, 1975, Pat. No. 4,036,864. This application Mar. 9, 1977, Ser. No. 775,879

Claims priority, application United Kingdom, Jun. 4, 1974, 24734/74

The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.

Int. Cl.[3] C07J *1/00*

U.S. Cl. 260—239.55 R 6 Claims

1. A process for the electrophilic fluorination of a saturated organic compound containing a hydrogen atom bound to a tertiary carbon atom consisting essentially of reacting the said compound with an electrophilic fluorinating agent selected from the group consisting of molecular fluorine, pentafluorosulphur hypofluorite and lower fluoroalkyl hypofluorites in which the fluoroalkyl moiety contains at least two fluorine atoms per carbon atom, said fluorinating agent being substantially homogeneously dispersed in a liquid medium and said reaction being conducted in the presence of a free radical inhibitor to suppress formation of free fluorine radicals so that said hydrogen atom is electrophilically replaced by a fluorine atom, and recovering the thus-obtained tertiary organic fluoride.

4,284,559

10-HYDROXY-1,2,3,4,10,14B-HEXAHYDRODIBENZO-[C,F] PYRAZINO-1,2A-AZEPINES

Willem J. van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

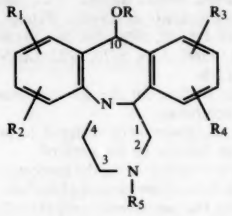
Filed Sep. 21, 1979, Ser. No. 77,693

Claims priority, application Netherlands, Sep. 26, 1978, 7809726

Int. Cl.[3] C07D *487/04*

U.S. Cl. 260—243.3 14 Claims

1. A compound of the formula:



wherein:

(a) R is hydrogen, alkyl of one to six carbons, aralkyl of seven to ten carbons, or a carboxylic acyl group of one to six carbons;

(b) R_1, R_2, R_3 and R_4 each represent hydrogen, hydroxy, halogen, alkyl of one to six carbons, alkoxy of one to six carbons, alkylthio of one to six carbons, or trifluoromethyl; and

(c) R_5 represents hydrogen or an alkyl group of one to six carbons;

and pharmaceutically acceptable non-toxic salts thereof.

4,284,560

PROCESS FOR THE PREPARATION OF COMPLEX COMPOUNDS OF THE COBALT PHTHALOCYANINE SERIES

Helmut Seidler, Bad Godesberg, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 21, 1977, Ser. No. 761,328

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1976, 2602644

Int. Cl.[3] C09B *47/22*

U.S. Cl. 260—314.5 3 Claims

1. Process for the preparation of a complex salt of trivalent cobalt having six coordinate bonds, four of which are occupied by a phthalocyanine ring system having two negative charges and the remaining two of which are each occupied by a primary, secondary, or tertiary aliphatic, aromatic, or heterocyclic monoamine or polyamine which comprises reacting cobalt phthalocyanine with oxygen and a halogen acid to produce the corresponding cobalt (III) phthalocyanine halide, which is then reacted with said amine to produce said complex salt in a highly purified form.

4,284,561

HYDROXAMIC ACID DERIVATIVES OF MERCAPTOACYL AMINO ACIDS

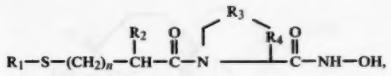
Edward W. Petrillo, Jr., Pennington, and Miguel A. Ondetti, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 3, 1979, Ser. No. 99,382

Int. Cl.[3] C07D *207/08, 277/06;* A61K *31/40, 31/425*

U.S. Cl. 260—326.2 19 Claims

1. A compound having the formula



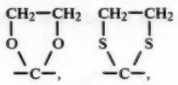
wherein

R_1 is hydrogen, alkyl, aryl, arylalkyl or

wherein R_5 is alkyl or aryl;

R_2 is hydrogen, alkyl, trifluoromethyl or pentafluoroethyl;

R_3 is $-CH_2-$, $-CH(OH)-$, $-CH(O\text{-alkyl})-$, $-CH(O\text{-aryl})-$, $-CH(S\text{-alkyl})$, $-CH(S\text{-aryl})$, $-C(O\text{-alkyl})_2$, $-C(S\text{-alkyl})_2$,



$-CCl_2-$, $-CF_2-$, $-CHCl-$, or $-CHF-$ and R_4 is $-CH_2$; or together, R_3 and R_4 are $-CH{=}CH-$; and n is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,

nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,284,562

PROCESS FOR PREPARING PYRROLE-2-ACETIC ACIDS

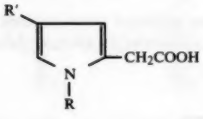
Neal G. Anderson, North Brunswick, N.J., and John R. Carson, Norristown, Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 97,757, Nov. 27, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,240

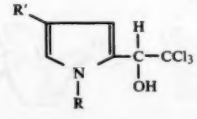
Int. Cl.[3] **C07D** *207/337*

U.S. Cl. 260—326.2 **6 Claims**

1. The process for preparing N-H and N-loweralkylpyrrole-2-acetic acids of the formula:



which comprises reacting a corresponding compound of the formula:



in the presence of sodium dithionite and of a base of the formula MOH, wherein in the foregoing formulas, R is hydrogen or loweralkyl, R′ is hydrogen or loweralkyl and M is an alkali metal, an alkaline earth metal or a tetraalkylammonium.

4,284,563

9,10,11,12,12-PENTACHLORO 4,6-DIOXA-5-THIA-1-AZA-TRICYCLO[7.2.1.0^{2,8}]DODEC-11-ENE

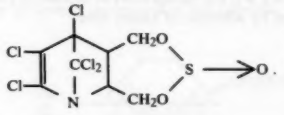
John L. Wong, Louisville, Ky., assignor to Research Corporation, New York, N.Y.

Division of Ser. No. 876,136, Feb. 8, 1978, Pat. No. 4,167,367, which is a division of Ser. No. 778,114, Mar. 16, 1977, Pat. No. 4,115,391, which is a division of Ser. No. 672,322, Mar. 31, 1976, Pat. No. 4,081,448, which is a continuation-in-part of Ser. No. 454,576, Mar. 25, 1974. This application Feb. 14, 1979, Ser. No. 12,025

Int. Cl.[3] **C07D** *411/14*

U.S. Cl. 260—330.3 **1 Claim**

1. A compound having a structural formula:



4,284,564

PROCESS FOR THE IN-SOLVENT, IN-SITU GENERATION OF HALOALKYL ALKYL ETHERS USEFUL TO PRODUCE N-SUBSTITUTED-2-HALOACETANILIDES

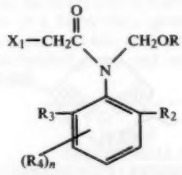
Gerhard H. Alt, University City, and John P. Chupp, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 25, 1980, Ser. No. 133,720

Int. Cl.[3] **C07C** *103/375;* **C07D** *305/06, 307/06, 309/04*

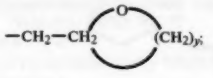
U.S. Cl. 260—333 **12 Claims**

1. A process for preparing a compound of the formula



(IV)

where X_1 is chloro, bromo or iodo; R is C_{1-10} alkyl, C_{3-10} alkenyl, C_{3-10} cycloalkyl, C_{3-10} alkynyl, C_{1-5}alkoxy (C_{2-5}) alkyl, mono-halo (C_{2-5}) alkyl, mono-halo (C_{3-5}) alkenyl or



y is the integer 2, 3 or 4; with the proviso that when R is alkenyl or alkynyl the carbon atom attached to the oxygen may not share a double or triple bond with an adjacient carbon atom;

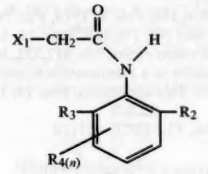
R_2 is C_{1-8} alkyl, C_{2-8} alkenyl, C_{3-8} alkynyl, C_{1-8} alkoxy, C_{1-8} alkoxy (C_{1-5}) alkyl, halo (C_{1-5}) alkyl, halogen, NO_2, C_{1-5} alkoxy (C_{1-5}) alkoxy or C_{1-5} alkoxy (C_{1-5}) alkoxy (C_{1-5}) alkoxy; R_3 is hydrogen, C_{1-8} alkyl, C_{2-8} alkenyl, C_{1-8} alkoxy, C_{1-8} alkoxy (C_{1-5}) alkyl, halo (C_{1-5}) alkyl, halogen or NO_2;

R_4 is C_{1-8} alkyl, halo (C_{1-5}) alkyl, halogen or NO_2; n is the integer zero, one or two;

which comprises reacting, in a solvent and in the presence of a phase transfer catalyst, an alcohol of the formula

ROH (V)

(where R is as defined in Formula IV);
formaldehyde, an acid halide and a compound of the formula



(VI)

(where X_1, R_1, R_3, R_4 and n are as defined in Formula IV); followed by addition of excess base.

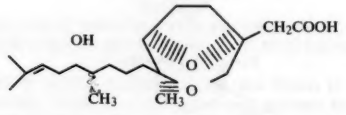
4,284,565

TOTAL SYNTHESIS OF 1RS,4SR,5RS-4-(4,8-DIMETHYL)-5-HYDROXY-7-NONEN-1-YL)-4-METHYL-3,8-DIOXABICYCLO[3.2.1]OCTANE-1-ACETIC ACID AND RELATED COMPOUNDS

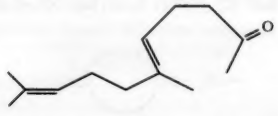
Zoltan G. Hajos, Princeton, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed May 2, 1980, Ser. No. 146,538
Int. Cl.[3] **C07D** *319/10*
U.S. Cl. 260—340.6 **12 Claims**

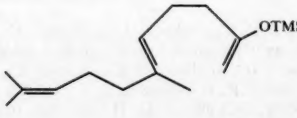
1. The process for the preparation of a compound of the formula



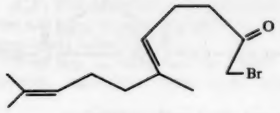
which comprises reacting a compound of the formula



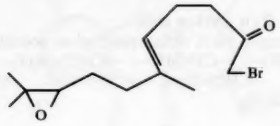
with trimethylsilyl chloride to form an enol silylether of the formula



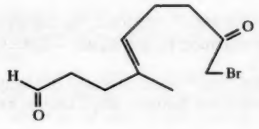
reacting the enol silylether with a brominating agent to form a bromide of the formula



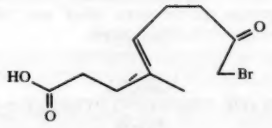
reacting the compound formed with a peroxy acid to form an epoxide of the formula



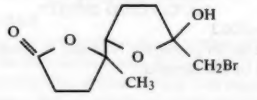
reacting the epoxide with periodic acid to form an aldehyde of the formula



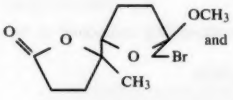
reacting the aldehyde with an oxidizing agent to form an acid of the formula



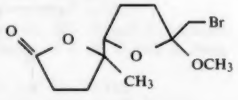
reacting the acid formed with a peroxy acid to form a bromo hemiketal γ-lactone of the formula



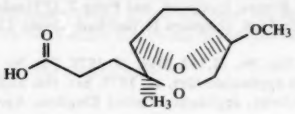
reacting the bromo hemiketal γ-lactone with a trialkyl orthoformate to form a mixture of the cis/trans-bromo ketal lactone of the formula



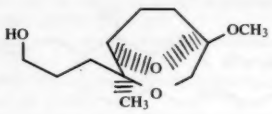
and



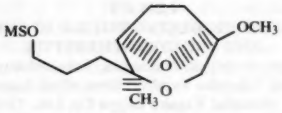
cyclizing the cis bromo ketal lactone with a cyclizing agent to form a bicyclic ketal acid of the formula



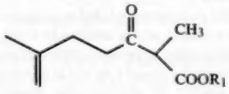
reacting the ketal acid with a first reducing agent to form an alcohol of the formula



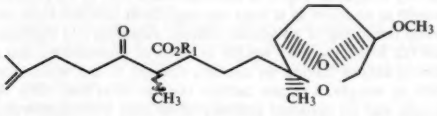
reacting the alcohol with methanesulfonyl chloride to form a mesylate of the formula



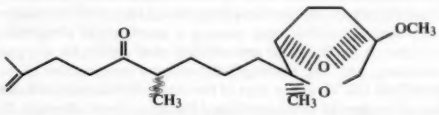
reacting the mesylate with a compound of the formula



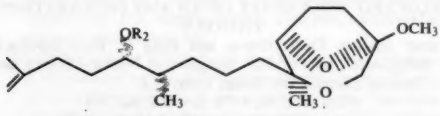
to form a condensation product of the formula



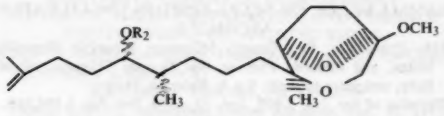
hydrolyzing and decarboxylating the carboxylic ester with a decarboxylating agent to form a ketone of the formula



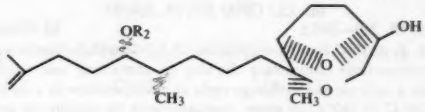
reducing the ketone with a second reducing agent to form an alcohol of the formula



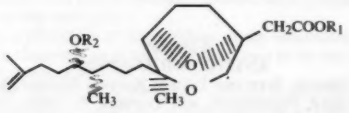
esterifying the alcohol with an esterifying agent to form an ester of the formula



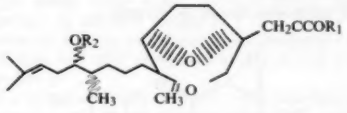
reacting the ketal with acid to form a hemiketal of the formula



reacting the hemiketal with (carbethoxymethylene)triphenylphosphorane to form a compound of the formula



isomerizing the 8-nonenyl ester with an isomerizing agent to form a 7-nonenyl ester of the formula



and hydroxyzing the esters with a hydrolyzing agent, wherein R_1 is hydrogen or a lower alkyl group having 1–5 carbon atoms, R_2 is hydrogen or lower acyl having 2–5 carbon atoms, TMS is a trimethylsilyl group and MS is a methylsulfonyl group.

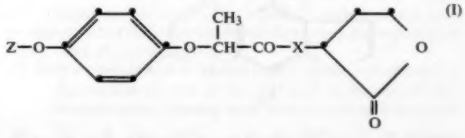
4,284,566

HERBICIDAL α-[4-TRIFLUOROMETHYLPHENOXY)-PROPIONIC ACID γ-BUTYROLACTONE ESTER AND THIOESTER

Beat Böhner, Binningen, and Hermann Rempfler, Ettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,797
Claims priority, application Switzerland, Jan. 4, 1979, 52/79
Int. Cl.³ C07D *307/32*
U.S. Cl. 260—343.6 **3 Claims**

1. An α-phenoxy-propionic acid-γ-butyrolactone ester or thioester of the formula I



(I)

wherein

X is oxygen or sulfur,

Z is the 4-trifluoromethylphenyl group.

4,284,567

METHOD FOR THE CYCLIZATION OF GAMMA-DELTA, OR DELTA-EPSILON UNSATURATED ALCOHOLS

Aldo Prevedello, San Donato Milanese; Maurizio Brunelli, Milan, and Edoardo Platone, San Donato Milanese, all of Italy, assignors to Anic, S.p.A, Palermo, Italy

Division of Ser. No. 5,507, Jan. 22, 1979, Pat. No. 4,199,516, which is a division of Ser. No. 918,445, Jun. 23, 1978, Pat. No. 4,150,037, which is a continuation of Ser. No. 670,728, Mar. 26, 1976, abandoned. This application Oct. 4, 1979, Ser. No. 81,885
Claims priority, application Italy, Mar. 27, 1975, 21724 A/75; Nov. 27, 1975, 29726 A/75
Int. Cl.[3] C07D *307/16, 309/04*
U.S. Cl. 260—345.1 12 Claims

1. A method for the cyclization of 3,7-dimethyl-3-hydroxy-6-octenenitrile comprising the step of contacting said nitrile with a cationic ion exchange resin at a temperature in a range of 20° C. to 180° C. or more, consistent with the stability of said resin which is employed in a weight ratio of resin to nitrile from an almost catalytic quantity to one or higher.

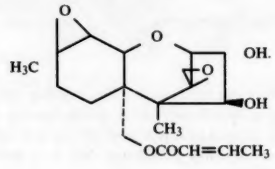
4,284,568

ANTITUMOR AGENTS

Henry Schmitz, Syracuse; Takushi Kaneko, Fayetteville; John M. Essery, Pleasantville, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,336
Int. Cl.[3] C07D *311/78*
U.S. Cl. 260—345.2 1 Claim

1. The compound having the formula



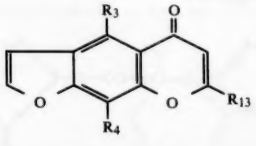
4,284,569

ANTIATHEROSCLEROTIC FUROCHROMONES

Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 11,816, Feb. 13, 1979, abandoned. This application Jan. 28, 1980, Ser. No. 116,322
Int. Cl.[3] C07D *311/78, 307/36*
U.S. Cl. 260—345.2 7 Claims

1. A furochromone of formula VI



VI

wherein R_{13} is $—CH_2—S—R_{10}$, $—CH_2—SO—R_{10}$, or $—CH_2—SO_2—R_{10}$, wherein R_{10} is alkyl of one to 5 carbon atoms, inclusive; wherein one of R_3 and R_4 is methoxy and the other is methoxy or hydrogen.

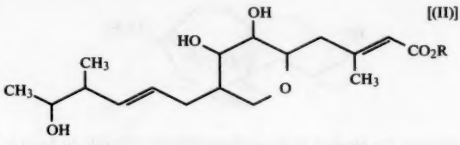
4,284,570

ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, Rudgwick, and Peter J. O'Hanlon, Redhill, both of England, assignors to Beecham Group Limited, England

Division of Ser. No. 21,712, Mar. 19, 1979, Pat. No. 4,248,887. This application Oct. 18, 1979, Ser. No. 85,894
Claims priority, application United Kingdom, Apr. 21, 1978, 15807/78
Int. Cl.[3] C07D *309/10*
U.S. Cl. 260—345.7 R 1 Claim

1. A compound of formula



[(II)]

wherein R is hydrogen or a salt-forming cation.

4,284,571

PROCESS FOR PRODUCING PHTHALIC ANHYDRIDE AND CATALYST THEREFOR

Takahisa Sato; Yoshiyuki Nakanishi; Keizo Maruyama, all of Himeji, and Takehiko Suzuki, Ohtsu, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Nov. 28, 1979, Ser. No. 97,982
Claims priority, application Japan, Nov. 29, 1978, 53/146459
Int. Cl.[3] C07D *307/89*
U.S. Cl. 260—346.4 15 Claims

1. A process for producing phthalic anhydride, which comprises packing a catalyst into a multitude fixed bed converter, said catalyst comprising a catalytically active material composed of 1 to 20 parts by weight as V_2O_5 of vanadium oxide, 99 to 80 parts by weight of anatase-type titanium oxide being porous and having a particle diameter substantially of 0.4 to 0.7 micron and a specific surface area of 10 to 60 m^2/g, and per 100 parts by weight of the sum of said two components, 0.01 to 1 part by weight as Nb_2O_5 of niobium oxide, 0.05 to 1.2 parts by weight as an oxide of at least one ingredient selected from the group consisting of potassium, cesium, rubidium and thallium, and 0.2 to 1.2 parts by weight as P_2O_5 of phosphorus, and a porous carrier having an alumina content of not more than 10% by weight, a silicon carbide content of at least 80% by weight and an apparent porosity of at least 10% supporting said catalytically active material thereon in an amount of about 3 to 15 grams per 100 cubic centimeters of said carrier, wherein the total volume of pores having a diameter of 0.15 to 0.45 micron present in the layer of the catalytically active material on the carrier is at least 50% of that of pores having a diameter of not more than 10 microns present in said layer of the catalytically active material; and passing a starting gas comprising o-xylene or naphthalene and oxygen or a molecular oxygen-containing gas, said starting gas having a temperature of not more than 150° C. at the inlet of the converter and a concentration of oxygen of not more than 12% by volume, through the catalyst layer at a temperture of 300° to 450° C., thereby catalytically oxidizing the o-xylene or naphthalene.

4,284,572

BLOCKED ISOCYANATE DIOLS AND PREPARATION THEREOF

Henry Stanley, Cedar Grove, and Dilip K. Ray-Chaudhuri, Bridgewater, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 15, 1978, Ser. No. 969,771
Int. Cl.[3] C07D *307/16;* C07C *127/19, 69/78*
U.S. Cl. 260—347.4 7 Claims

1. A blocked isocyanate diol consisting of an organic diiso-

cyanate containing one isocyanate group which has been reacted with a blocking agent containing a hydroxyl group, and a second isocyanate group which has been reacted with the amine portion of an amine diol of one of the general formulae:

$NH(DOH)_2$ or $NHRD'(OH)_2$

wherein

D is an alkylene (C_2–C_{20}) or aralkylene (C_7–C_{20}) radical in which the hydroxyl group is attached to an aliphatic carbon atom,

D' is an alkylene (C_2–C_{20}) or aralkylene (C_8–C_{20}) radical in which each of the hydroxyl groups is attached to a different aliphatic carbon atom, and

R is hydrogen or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl, or aralkyl radical which is not reactive with active hydrogen atoms or isocyanate groups.

5. A process for preparing a blocked isocyanate diol comprising the steps of:

a. reacting a blocking agent which contains a hydroxyl group with an organic diisocyanate at a temperature of 25°–100° C. for 1–8 hours for aromatic diisocyanates and at 50°–120° C. for 3–10 hours for aliphatic diisocyanates, wherein the ratio of blocking agent to diisocyanate is from 0.8:1.0 to 1.2:1.0, to obtain a blocked adduct;

b. reacting the blocked adduct with an amine diol of one of the general formulae:

$NH(DOH)_2$ or $NHRD'(OH)_2$

wherein

D is an alkylene (C_2–C_{20}) or aralkylene (C_7–C_{20}) radical in which the hydroxyl group is attached to an aliphatic carbon atom,

D' is an alkylene (C_2–C_{20}) or aralkylene (C_8–C_{20}) radical in which each of the hydroxyl groups is attached to a different aliphatic carbon atom, and

R is hydrogen or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl aryl, alkaryl, or aralkyl radical which is not reactive with active hydrogen atoms or isocyanate groups,

wherein the ratio of blocked adduct to amine diol is from 0.8:1.0 to 1.1:1.0, said reaction being carried out at a temperature of 0°–100° C. for 1–8 hours under anhydrous conditions; and

c. isolating the resultant product.

4,284,573
PREPARATION OF GLYCIDYL ETHERS

John F. Arnett, Newton, and George A. Doorakian, Bedford, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 1, 1979, Ser. No. 80,769
Int. Cl.³ C07D *301/28*
U.S. Cl. 260—348.15 **10 Claims**

1. A method of producing a glycidyl ether of a phenol comprising the steps of:

(a) introducing a catalytic amount of a tri-n-butyl)methyl phosphonium bicarbonate salt into a liquid phase mixture of a phenol with excess epichlorohydrin to thereby produce at reactive conditions a coupled reaction product comprising the corresponding propylenechlorohydrin ether of said phenol; and

(b) contacting the coupled reaction product in a liquid organic solvent with sufficient aqueous base in the presence of a catalytic amount of the tri(n-butyl)methyl phosphonium bicarbonate or its in situ derivative salts to convert the propylenechlorohydrin groups to glycidyl ether groups.

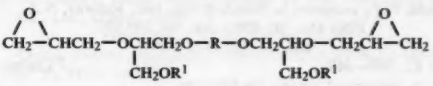
4,284,574
DIGLYCIDYL ETHERS OF DI-SECONDARY ALCOHOLS, THEIR PREPARATION, AND CURABLE COMPOSITIONS CONTAINING THEM

Madan M. Bagga, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,693
Claims priority, application United Kingdom, Jun. 15, 1979, 20990/79
Int. Cl.³ C07D *303/34, 303/27*
U.S. Cl. 260—348.43 **6 Claims**

1. A compound of the general formula

IX



where

R represents

(i) a phenylene or naphthylene group, or

(ii) a phenylene or naphthylene group substituted in the nucleus by one or two alkyl groups, each of from 1 to 4 carbon atoms, or

(iii) a phenylene or naphthylene group substituted in the nucleus by one or two chlorine atoms or by one or two bromine atoms, or

(iv) a radical consisting of two or three phenylene groups linked by one or two carbon-carbon bonds, ether oxygen atoms, sulfur atoms, sulfonyl groups, sulfoxide groups, or alkylene groups of 1 to 5 carbon atoms, or

(v) a radical consisting of two or three phenylene groups linked by one or two carbon-carbon bonds, ether oxygen atoms, sulfur atoms, sulfonyl groups, sulfoxide groups, or alkylene groups of 1 to 5 carbon atoms, substituted in one or two phenylene groups by a total of at most two alkyl groups, each of from 1 to 4 carbon atoms, or

(vi) a radical consisting of two or three phenylene groups linked by one or two carbon-carbon bonds, ether oxygen atoms, sulfur atoms, sulfonyl groups, sulfoxide groups, or alkylene groups of 1 to 5 carbon atoms, substituted in one or two phenylene groups by a total of at most two halogen atoms selected from chlorine and bromine,

each R^1 represents

(vii) a straight chain or branched alkyl group of 1 to 16 carbon atoms,

(viii) a straight chain or branched alkyl group of 1 to 16 carbon atoms, substituted by a total of at most four halogen atoms selected from chlorine and bromine, or

(ix) a straight chain or branched alkenyl group of 2 to 6 carbon atoms,

(x) a straight chain or branched alkenyl group of 2 to 6 carbon atoms, substituted by a total of at most four halogen atoms selected from chlorine and bromine, or

(xi) a phenyl or naphthyl group, or

(xii) a phenyl or naphthyl group, substituted in the nucleus by one or two chlorine atoms or by one or two bromine atoms, or

(xiii) a phenyl or naphthyl group, substituted in the nucleus by one or two alkyl groups, each of 1 to 4 carbon atoms, and having in all at most 12 carbon atoms, or

(xiv) a phenylalkyl or naphthylalkyl group having in all at most 12 carbon atoms, or

(xv) a phenylalkyl or naphthylalkyl group, substituted in the nucleus by one or two chlorine or by one or two bromine atoms, having in all from 7 to 12 carbon atoms, or

(xvi) a phenylalkyl or naphthylalkyl group, substituted in the nucleus by one or two alkyl groups each of 1 to 4 carbon atoms, said phenylalkyl or naphthylalkyl group having in all at most 12 carbon atoms, or

(xvii) a mononuclear cycloalkyl group of 3 to 6 carbon atoms,

or

(xviii) a mononuclear cycloalkylalkyl group of from 4 to 10 carbon atoms.

4,284,575

SUBSTITUTED BENZENESULFONYLAZIDES

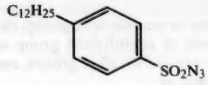
Frederick W. Bollinger, and George G. Hazen, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 10, 1980, Ser. No. 195,997

Int. Cl.³ C07C *117/00*

U.S. Cl. 260—349 **2 Claims**

1. A compound having the formula:



4,284,576

PREPARATION OF ANTHRAQUINONE FROM TETRAHYDROANTHRAQUINONE

Norbert Schenk, Leverkusen; Jörg Krekel, Essen; Paul Losacker, Leichlingen, and Wolfgang Swodenk, Odenthal-Gloebusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 822,011, Aug. 4, 1977, abandoned, which is a continuation of Ser. No. 706,091, Jul. 16, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 944,934

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532398

Int. Cl.³ C07C *50/18*

U.S. Cl. 260—369 **12 Claims**

1. In a process for the preparation of anthraquinone by reacting a liquid feed containing naphthalene, phthalic anhydride and tetrahydroanthraquinone with oxygen at elevated temperature while simultaneously separating off at least part of the naphthalene, in a distillation system which consists of a column having a rectifying section and a boiler, the improvement wherein the boiler of the distillation system has several chambers and is operated as a cascade and the liquid feed containing naphthalene, phthalic anhydride and tetrahydroanthraquinone is fed only into the lowest chamber of the boiler.

4,284,577

NOVEL VITAMIN D_3 DERIVATIVE AND PROCESS FOR PREPARING THE SAME

Sachiko Yamada, 1227-4-1218, Hatsuzawamachi, Hachioji-shi, Tokyo, Japan; Masayuki Ohmori, Sagamikomachi, Japan, and Hiroaki Takayama, 2-6-12-31, Hatagaya, Shibuya-ku, Tokyo, Japan, assignors to Sachiko Yamada and Hiroaki Takayada, both of Tokyo, Japan

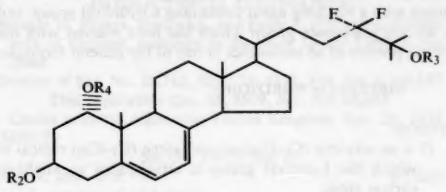
Filed Feb. 7, 1980, Ser. No. 119,390

Claims priority, application Japan, Feb. 16, 1979, 54-16000; Feb. 19, 1979, 54-17220

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **2 Claims**

1. A provitamin D_3 derivative of the formula:



wherein R_2, R_3 and R_4 may be the same or different and represent hydrogen or a hydroxyl-protecting group.

4,284,578

PROCESS FOR THE DIRECTED INTERESTERIFICATION OF A TRIGLYCERIDE OIL OR OIL MIXTURE

René De Lathauwer, Herent; Martin Van Opstal, and Albert J. Dijkstra, both of Izegem, all of Belgium, assignors to Safinco, Izegem, Belgium

Filed Sep. 11, 1979, Ser. No. 74,474

Claims priority, application Belgium, Sep. 14, 1978, 190.485

Int. Cl.³ C11C *3/02*

U.S. Cl. 260—410.7 **21 Claims**

1. Process for the directed interesterification of a triglyceride oil or oil mixture which comprises:

(a) adding a low temperature-active interesterification catalyst to the triglyceride oil or oil mixture;

(b) activating the interesterification catalyst;

(c) cooling the triglyceride oil or oil mixture containing activated interesterification catalyst to a preselected upper cycle temperature, said temperature being above the reference cloud point temperature of the triglyceride oil or oil mixture;

(d) carrying out a first temperature and time regulated cycle, taking 20 minutes or less wherein, in sequence:

(i) the temperature of the triglyceride oil or oil mixture is rapidly reduced from the upper cycle temperature to the reference cloud point temperature or a preselected lower cycle temperature, said lower cycle temperature being below the reference cloud point temperature; and

(ii) if the temperature of the triglyceride oil or oil mixture is below the reference cloud point temperature, the temperature of the triglyceride mixture is increased to the reference cloud point temperature;

(e) carrying out at least three successive temperature and time regulated cycles with each such cycle taking 120 minutes or less wherein, in sequence:

(i) the temperature of the triglyceride oil or oil mixture is increased from the reference cloud point temperature to the upper cycle temperature;

(ii) the temperature of the triglyceride oil or oil mixture is rapidly reduced from the upper cycle temperature to the lower cycle temperature; and,

(iii) the temperature of the triglyceride oil or oil mixture is increased from the lower cycle temperature to the reference cloud point temperature.

4,284,579
(N-PHOSPHONACETYL-L-ASPARTATO)(1,2-DIAMINOCYCLCHEXANE)PLATINUM(II) OR ALKALI METAL SALT

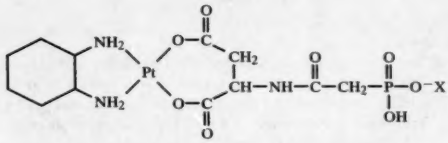
Sandra J. Meischen; Glen R. Gale, both of Charleston, S.C., and Marion B. Naff, Bethesda, Md., assignors to The United States of America as represented by the of the Department of Health & Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 58,287, Jul. 17, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 155,531

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R **2 Claims**

1. The compound (N-phosphonacetyl-L-aspartato)(1,2-diaminocyclohexane)platinum(II) or alkali metal salt of the formula



where X is Na^+, K^+, Li^+, or H

4,284,580
FRACTIONATION OF TRIGLYCERIDE MIXTURE

Ted J. Logan, and Richard M. King, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 2, 1980, Ser. No. 108,999

Int. Cl.³ C09F *5/10*; **C11B** *3/00*

U.S. Cl. 260—428.5 **17 Claims**

1. A process for separating a mixture of triglycerides with different Iodine Values and having their carboxylic acid moieties containing from 6 to 26 carbon atoms, to produce fractions of higher Iodine Value and lower Iodine Value, said process comprising the steps of

(a) contacting a solution of said mixture in solvent with surface aluminated silica gel adsorbent to selectively adsorb triglyceride of higher Iodine Value and to leave in solution a fraction of said mixture enriched in content of triglyceride of lower Iodine Value,

(b) removing solution of fraction enriched in content of triglyceride of lower Iodine Value from contact with adsorbent which has selectively adsorbed triglyceride of higher Iodine Value,

(c) contacting adsorbent which has selectively adsorbed triglyceride of higher Iodine Value with solvent to cause desorption of adsorbed triglyceride and provide a solution in solvent of fraction enriched in content of triglyceride of higher Iodine Value,

(d) removing solution of fraction enriched in content of triglyceride of higher Iodine Value from contact with adsorbent;

said mixture of triglycerides being essentially free of impurities which can foul the adsorbent; the solvent in step (a) and the solvent in step (c) having the same composition or different compositions and being characterized by a solubility parameter (on a 25° C. basis) ranging from about 7.0 to about 15.0, a solubility parameter dispersion component (on a 25° C. basis) ranging from about 7.0 to about 9.0, a solubility parameter polar component (on a 25° C. basis) ranging from about 0 to about 6.0 and a solubility parameter hydrogen bonding component (on a 25° C. basis) ranging from 0 to about 11.5; said adsorbent being derived from silica gel having a mean pore diameter of at least about 75 Angstroms and a surface area of at least about 100 square meters per gram; said absorbent being further characterized by a ratio of surface-silicon atoms to aluminum atoms ranging from about 3:1 to about 20:1, a moisture content less than about 10% by weight, and a particle size ranging from about 200 mesh to about 20 mesh; said adsorbent having cation substituents selected from the group consisting of cation substituents capable of forming π complexes and cation substituents not capable of forming π complexes and combinations of these; the solvent in step (a) and the solvent in step (c) and the ratio of surface-silicon atoms to aluminum atoms in the adsorbent and the level of cation substituents capable of forming π complexes being selected to provide selectivity in step (a) and desorption in step (c).

4,284,581
LITHIUMALUMINIUM HYDRIDE COMPOUNDS

Ryoji Noyori, Aichi, Japan, assignor to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 5, 1979, Ser. No. 82,240

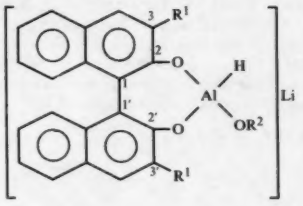
Claims priority, application Japan, Oct. 12, 1978, 53-124704; May 10, 1979, 54-56299

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 AD **24 Claims**

1. A lithium 1,1′-binaphthyl-2,2′-dioxyaluminium hydride compound of the general formula:

IX



wherein R^1 represents a hydrogen atom, or a methyl or ethyl group, and R^2 represents a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms unsubstituted or substituted by at least one fluorine atom, hydroxy group, or straight- or branched-chain alkoxy group containing from 1 to 4 carbon atoms, or represents a phenyl group unsubstituted or substituted by at least one straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms.

4,284,582
PROCESS FOR THE PREPARATION OF CYCLOPROPANE DERIVATIVES, INTERMEDIATES IN THE SYNTHESIS OF PYRETHROID INSECTICIDES

Albert E. Kaye, and Alan C. Tucker, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 28,852, Apr. 10, 1979, abandoned. This application Aug. 12, 1980, Ser. No. 177,453

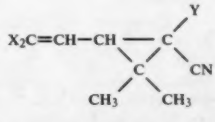
Claims priority, application United Kingdom, Apr. 28, 1978, 16943/78; Apr. 28, 1978, 16944/78; Apr. 28, 1978, 16945/78

Int. Cl.³ C07C *120/00, 121/48*

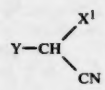
U.S. Cl. 260—464 **8 Claims**

1. A process for the preparation of a compound of formula:

(I)

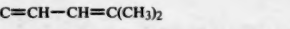


wherein both groups X are chlorine, bromine or trifluoromethyl, or one X is chlorine or bromine and the other is trifluoromethyl, and Y is —CN or —COOR in which R is an alkyl group of 1 to 4 carbon atoms, in which a compound of the formula:



(II)

wherein X^1 is chlorine or bromine and Y has the meaning defined above, is reacted with a diene of the formula:



(III)

wherein X has the meaning defined above, the reaction taking place at a temperature from 0° to 140° C. for a time of 30 minutes to 30 hours, in the presence of from 0.01 to 0.1 mol per mol of the diene of a catalyst selected from the group consisting of metallic copper, cupric acetate, cupric chloride, copper stearate, cupric oxide, cuprous cyanide, cuprous chloride, copper acetylacetonate, di-μ-methoxobis(pentane-2,4-dionato)dicopper and di-μ-methoxobis(salicylaldehydato)-dicopper, from 0.5 to 2.0 moles per mol of the diene of a base selected from the group consisting of an alkali or alkaline earth metal carbonate or borate, an alkali metal (1–4C) alkoxide and an alkaline earth metal oxide, and in a solvent selected from the group consisting of water together with a phase transfer catalyst, methanol, ethanol, isopropanol, tert.butanol, ethyl acetate, butyl acetate, acetonitrile, dimethylformamide, dimethylsulphoxide and N,N-dimethyl acetamide.

4,284,583

AMMOXIDATION PROCESS WITH EXTERNAL CATALYST REGENERATION ZONE

Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 88,987, Oct. 29, 1979. This application Jul. 22, 1980, Ser. No. 171,226

Int. Cl.[3] **C07C** *120/14;* **B01J** *37/12;* **F27B** *15/08*

U.S. Cl. 260—465 C **13 Claims**

1. A process for the ammoxidation of alkylaromatic hydrocarbons which comprises the steps of:

(a) passing a feed stream which comprises an alkyl-aromatic hydrocarbon into the lower one-half of a reaction zone which is maintained at ammoxidation conditions including a temperature of between 350° C. and 550° C. and which contains a fluidized bed of catalyst;

(b) passing a first oxygen-containing stream and ammonia into the lower one-half of the reaction zone;

(c) removing from the reaction zone an effluent comprising an aromatic nitrile and recovering the aromatic nitrile;

(d) transferring a stream of used catalyst from the reaction zone into an isolated regeneration zone which is maintained at catalyst oxidation conditions including a temperature between 350° C. and 550° C. and which contains a fluidized bed of catalyst;

(e) heating a second oxygen-containing stream to a temperature above 350° C. and passing the second air stream into the regeneration zone;

(f) removing from the regeneration zone a regeneration zone effluent stream which comprises at least 10 mole percent oxygen and passing the regeneration zone effluent stream into the reaction zone as a third oxygen-containing vapor stream which supplies at least 8 mole percent of the total oxygen consumed within the reaction zone; and,

(g) transferring a stream of regenerated catalyst from the regeneration zone to the reaction zone.

4,284,584

PROCESS FOR THE PREPARATION OF ACYL CYANIDES

Kurt Findeisen, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

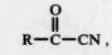
Continuation of Ser. No. 777,286, Mar. 11, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 967,932

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614240

Int. Cl.[3] **C07C** *51/54, 63/04*

U.S. Cl. 260—545 R **18 Claims**

1. A process for the preparation of an acyl cyanide of the general formula

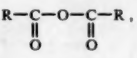


(I)

in which

R represents alkyl or substituted alkyl of from 1 to 8 carbon atoms, cycloalkyl or substituted cycloalkyl with 3 to 12 carbon atoms, aryl or substituted aryl; or an optionally substituted 5-membered or 6-membered heterocyclic radical which can also be fused with a benzene ring,

which process comprises reacting a carboxylic acid anhydride of the general formula



(II)

in which

R has the abovementioned meaning, in the presence of a compound of the general formula

(III),

in which

R has the abovementioned meaning, and

X represents a —COCl, —COF, —COBr, $-CCl_3$, $-CF_3$, $-CBr_3$, $-CHCl_2$, $-CHF_2$ or $-CHBr_2$ group, with an alkali metal cyanide or anhydrous hydrocyanic acid, at a temperature of between 50° and 300° C.

4,284,585

PROCESS FOR THE PREPARATION OF ACETIC ANHYDRIDE

Joseph Pugach, Ho-Ho-Kus, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

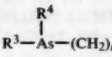
Filed Dec. 26, 1979, Ser. No. 106,627

Int. Cl.[3] **C07C** *51/56*

U.S. Cl. 260—549 **7 Claims**

1. A process for the preparation of acetic anhydride which comprises reacting carbon monoxide, a halide which is an iodide or bromide and a compound selected from the group consisting of methyl acetate and dimethyl ether under substantially anhydrous conditions in the presence of 1 to 75 weight percent acetic acid, in the presence of a Group VIII noble metal catalyst and in the presence of a multiple promoter comprising metallic zirconium, and an organo-phosphorus compound or an organo nitrogen compound wherein the phosphorus and nitrogen are trivalent, or an arsine of the formula:

wherein R and R^1 are monocyclic aryl groups or alkyl groups and R^2 is the radical



a monocyclic aryl group or an alkyl group, and wherein R^3 and R^4 are each a monocyclic aryl group or an alkyl group, n being zero or a digit from 1–20.

4,284,586

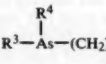
PROCESS FOR THE PREPARATION OF ACETIC ANHYDRIDE

Joseph Pugach, Ho-Ho-Kus, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,628
Int. Cl.³ C07C *51/56*
U.S. Cl. 260—549 **5 Claims**

1. A process for the preparation of acetic anhydride which comprises reacting carbon monoxide, a halide which is an iodide or bromide and a compound selected from the group consisting of a methyl acetate and dimethyl ether under substantially anhydrous conditions in the presence of 1 to 75 weight percent acetic acid, in the presence of a Group VIII noble metal catalyst and in the presence of a multiple promoter comprising metallic hafnium, and an organo-phosphorus compound or an organo-nitrogen compound wherein the phosphorus and nitrogen are trivalent, or an arsine of the formula:

wherein R and R^1 are monocyclic aryl groups or alkyl groups and R^2 is the radical



a monocyclic aryl group or an alkyl group, and wherein R^3 and R^4 are each a monocyclic aryl group or an alkyl group, n being zero or a digit from 1–20.

4,284,587

RADIOENZYMATIC ASSAY OF CATECHOLAMINES

Garland A. Johnson, Charleston Township, Kalamazoo County, and Jacob D. Peuler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 681,999, Apr. 30, 1976, abandoned. This application Oct. 12, 1978, Ser. No. 950,864
Int. Cl.³ G01N *31/00, 31/08, 33/48*; B01D *9/04, 11/04, 15/08*; C07C *91/30, 91/34*
U.S. Cl. 564—365 **6 Claims**

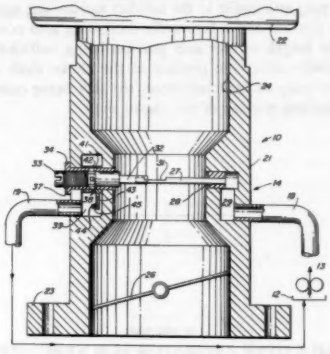
1. A method for purifying an O-methylated catecholamine selected from the group consisting of O-methylated epinephrine, norepinephrine and dopamine prepared from the catechol-O-methyl transferase catalyzed methylation of the said catecholamine obtained from a mammalian system which comprises preferentially extracting the O-methylated catecholamine from the enzymatic incubation mixture with an organic solvent, repartitioning into an aqueous acid of sufficient strength to protonate the amine function of the O-methylated catecholamine said acid leaving essentially no residue upon evaporation, separating the acid phase from the organic phase, and separating said O-methylated catecholamine from another O-methylated catecholamine or impurity by chromatographic means.

4,284,588

FUEL SYSTEM

Irving H. Hallberg, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 23, 1979, Ser. No. 23,378
Int. Cl.³ F02M *7/12, 37/00*
U.S. Cl. 261—36 A **4 Claims**



1. In a fuel system having a fuel source and a charge forming apparatus arranged for recirculating excess fuel, a regulator outlet port exposed to an air stream which strips fuel therefrom and a spaced return port for receiving excess fuel from said outlet port, said return port being in a location removed from said air stream, characterized by means to vary the effective size of said return port to vary the quantity of excess fuel recirculated and thus the amount of fuel to said outlet port which varies the fuel-air ratio delivered by the system, which means to vary the effective size of said return port comprises:

a rotatable sleeve surrounding said body having an opening corresponding generally in size to said return port, and means to rotate said sleeve and the relative position of said opening with respect to said return port to thus vary the effective size of said return port.

4,284,589

TAMPER RESISTANT CHOKE PULL-OFF

Jerry H. Winkley, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,733
Int. Cl.³ F02M *1/10*
U.S. Cl. 261—39 B **4 Claims**

1. In a carburetor for an internal combustion engine, the carburetor having an air passage through which air is drawn into the engine, a choke valve positioned at the inlet of the passage, the choke valve being pivotally mounted on a choke shaft for opening and closing the choke valve, a choke housing and a vacuum motor attached to the body of the carburetor at a location remote from the choke housing, and a link connecting the vacuum motor and the choke shaft for the vacuum motor to exert a choke valve opening force on the choke shaft when the engine is started, the improvement comprising means for making the vacuum motor and link assembly tamper resis-

tant to inhibit someone from changing the position at which the vacuum motor causes the choke valve to open, the tamper resisting means including a cover installed on the carburetor and shrouding at least a part of the vacuum motor, the link, and the portion of the choke shaft to which the link is connected thereby to inhibit access to these parts, the vacuum motor being mounted on a bracket attached to the carburetor and the cover being attachable to the bracket and having a semi-circular rear portion and a forwardly extending arm covering the link, the length of the arm portion being sufficient to also substantially cover the portion of the choke shaft extending from the body of the carburetor, the link being connected to this extending portion of the choke shaft.

4,284,590

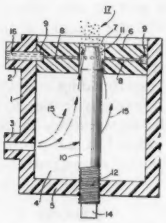
MULTIPLE ASPIRATOR FOR NEBULIZER

Roy DeBoer, Jr., Lake in the Hills, and Kenneth G. Miller, Palatine, both of Ill., assignors to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Sep. 17, 1980, Ser. No. 188,102

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—62 **8 Claims**



1. A multiple aspirator comprising:

a disk shaped member having an axis, two faces spaced along said axis with each face perpendicular thereto, an outer peripheral edge concentric with said axis and an axial aperture, concentric with said axis, connecting one face with the other;

a plurality of bores in said disk-shaped member, said bores being radial to said axis and angularly disposed about said axis, said bores connecting said outer peripheral edge with said axial aperture;

means to force a stream of gas from one side of said disk shaped member to the other through said axial aperture;

a rod shaped member, concentric on said axis, located to restrict the axial aperture so that gas flow from one side of said disk shaped member to the other can take place only in the annular clearance between said rod and said axial aperture;

means to supply fluid to the outer peripheral edge of said disk shaped member;

whereby the flow of gas in said annular clearance causes fluid to be drawn through each of said bores to said annular space, whereat it is nebulized and transported;

whereby each of said bores constitutes part of a separate aspirator, individual to its bore, and whereby each of said separate aspirators operates independently of the other separate aspirators.

4,284,591

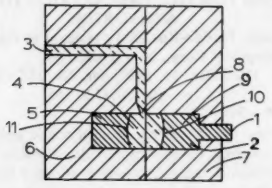
INJECTION MOLDING OF OPTICAL LENSES AND OPTICAL MOLDS

Charles W. Neefe, Big Spring, Tex., assignor to Neefe Optica Lab Inc., Big Spring, Tex.

Continuation-in-part of Ser. No. 144,565, Apr. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 31,479, Apr. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 793,388, May 25, 1977, abandoned. This application Oct. 23, 1980, Ser. No. 200,261

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.1 **3 Claims**



1. A method of molding optical lenses by the steps of heating and melting a resinous lens material, forcing with pressure the heated and melted resinous material into a runner tube and through a tapered restricted opening at the edge of the mold cavity, the velocity of the melted resinous material being increased upon passing through the tapered restricted opening and the temperature of the melted resinous material is increased by internal frictional forces upon passing through the tapered restricted opening and the viscosity of the melted resinous material is lowered upon passing through the tapered restricted opening, filling the lens mold cavity with the heated low viscosity resinous material, by allowing the melted lens material to rapidly move from the tapered restricted opening across the lens mold cavity, the molten lens material entering at the restricted opening and moving across to the opposite edge of the lens cavity to a point 180° removed from the entry gate and filling the lens cavity from the center line toward the two sides located 90° removed from the filling opening and providing air vents having a opening width of from one to three thousandths of an inch at the sides 90° removed from the filling opening, allowing the pressure within the mold cavity to equal the pressure present in the runner tube, allowing the heated resinous material to cool until the resinous material present in said restricted opening is solidified and sealing the molten lens material within the mold cavity, providing one stationary and one moveable opposed curved optical mold surfaces within said mold cavity, applying external force to the moveable optical mold surface moving said optical mold surface against the heated and melted resinous material present within the mold cavity, maintaining the external applied force on the resinous material and allowing the resinous material to cool and become a solid, opening the mold and removing the resinous optical lens.

4,284,592

COMBUSTION INHIBITORS

Geoffrey I. Evans, Malvern, and Stuart Gordon, Cleobury Mortimer, both of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birminghem, England

Continuation of Ser. No. 674,877, Apr. 8, 1976, abandoned. This application Jan. 15, 1980, Ser. No. 112,273

Claims priority, application United Kingdom, Apr. 9, 1975, 14651/75

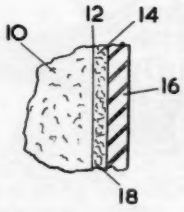
Int. Cl.³ C06B *21/00*

U.S. Cl. 264—3 R **14 Claims**

1. A method of priming a body of gas producing material comprising nitrocellulose and an energetic nitric ester plasticiser therefor to facilitate bonding a silicone elastomer combus-

tion inhibitor to a surface thereof which is to be inhibited, said method comprising the steps of:

(a) coating said surface with a solution of a polyvinyl acetal, said solution containing a cross-linking agent and having dispersed therein a particulate metal, and causing or allowing the coating to cure,



(b) applying to the coating formed in step (a) a coating of a solution of a siloxane resin, said resin having been formed by hydrolysis of a mixture comprising 92–94% by weight of difunctional chlorosilanes and 6–8% by weight of trifunctional chlorosilanes, said solution containing a cross-linking agent for the resin, and causing or allowing the coating to cure.

4,284,593

PREPARATION OF SHAPED BODIES

Peter W. Sutcliffe, Radley; Jim W. Isaacs, Harwell, and Colin E. Lyon, Charlton Heights, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 17, 1979, Ser. No. 39,965

Claims priority, application United Kingdom, May 26, 1978, 23670/78

Int. Cl.³ G21C *21/00*

U.S. Cl. 264—0.5 **15 Claims**

1. A method for the preparation of a shaped body which includes pressing a powder to give a "green" shaped body wherein the powder has been made by comminuting gel particles prepared by means of a gelation process, said gel particles prior to comminuting being of a size which presents no substantial dust hazard.

4,284,594

METHOD OF MANUFACTURING HOLLOW FIBER

Yasushi Joh; Akihiko Niina, both of Yokohama; Noriaki Kaneko, Kamakura; Toshio Sano, Yokohama; Noriyuki Ichige, Tokyo; Koji Ichikawa, Kawasaki; Akira Fukutome, Tokyo, and Hisako Sonobe, Fujisawa, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,537

Claims priority, application Japan, Dec. 20, 1978, 53-158054

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—41 **9 Claims**

1. In a method of manufacturing a hollow fiber characterized in that a spinning solution consisting essentially of cellulose ester dissolved in an organic solvent is extruded from an annular slit of an orifice while simultaneously introducing a core liquid into the inside hollow portion of the extruded spinning solution, the improvement comprising: (a) using a monoterpene or a solution of the monoterpene as core liquid; and (b) incorporating into the spinning solution a component which renders the monoterpene or the solution of the monoterpene nonmiscible with the spinning solution and develops phase separation therebetween.

4,284,595

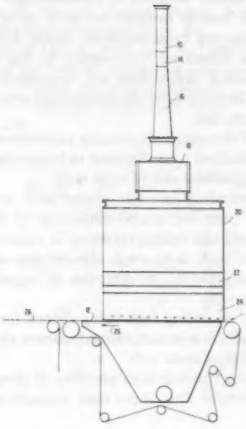
ORIENTATION AND DEPOSITION OF FIBERS IN THE MANUFACTURE OF FIBERBOARD

Thomas E. Peters, Boise, Id., and Joseph S. Bleymaier, Columbia, Md., assignors to Morrison-Knudsen Forest Products Company, Inc., Boise, Id.

Filed Jan. 19, 1979, Ser. No. 4,857

Int. Cl.³ B29J *5/00*; B29C *27/00*

U.S. Cl. 264—24 **15 Claims**



1. Continuous-line method for orienting and depositing lightweight furnish, including fibrous material with curable binder, in the manufacture of fiberboard having directional properties, comprising the steps of

providing a web presenting an extended surface area for deposition of furnish,

moving such web continuously to establish a forming direction,

providing lightweight furnish including elongated fibers moving along a flow path which is substantially normal to such surface for deposition of furnish,

guiding such furnish in the direction of such web,

orienting and depositing fibers with preferred orientation utilizing electrical and mechanical forces by

disposing a plurality of elongated electrically conductive rods in spaced relationship from each other along such forming direction and in predetermined adjacent relationship above the web, with longitudinal axes of such elongated rods being in transverse relationship to the forming direction,

establishing electrical potential in such rods to attract fibers to such rods and establish an electric field which exerts a force on fibers moving toward the web tending to orient longitudinal axes of such elongated fibers in parallel relationship to the plane of the mat being formed and aligned with the forming direction, and

controllably driving the elongated electrically charged rods to rotate such rods about their respective axes to deposit fibers adhering to such rods by contact of such fibers with a mat forming surface presented by such web.

11. Apparatus for use in continuous-line manufacture of fiberboard from lightweight furnish including fine textured elongated fibers and curable binding materials, such apparatus providing desired orientation and uniform deposition of fibers to enhance directional appearance characteristics in the fiberboard being formed, comprising

means for delivering lightweight furnish,

web means presenting a mat forming surface,

such web means including a continuously moving web having a longitudinal axis and a lateral dimension measured perpendicularly to such longitudinal axis and presenting a

preselected area for deposition of furnish having a lateral dimension correlated to that of the lateral dimension of the fiberboard being formed,

such means for delivering furnish in the direction of such web providing substantially uniform lateral and longitudinal distribution controlled flow of furnish as substantially individualized fibers moving toward such web for orientation and deposition purposes, and

orientation and deposition means comprising

guide wall means defining a flow-through structure for passage of furnish toward the web, such flow-through structure having cross-sectional lateral and longitudinal dimensions measured transversely to the flow path of furnish, which dimensions are correlated with corresponding dimensions of the preselected area of deposition of the fibers, and

a plurality of elongated electrically conductive rods having their longitudinal axes disposed in transverse relationship to the longitudinal axis of such web,

such rods extending laterally across such web a distance correlated with the lateral dimension of the fiberboard being formed and being positioned in closely spaced relationship to such web, such closely spaced relationship being preselected in the direction of approach of fibers toward the web,

such laterally extending rods being spaced from each other longitudinally in a predetermined manner along the direction of travel of such web,

drive means for rotating such plurality of elongated electrically conductive rods about their respective longitudinal axes, and

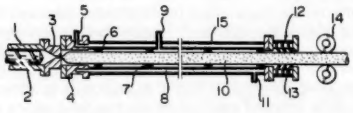
means for electrically energizing such rods to establish an electric field in the flow path of fibers approaching such rods and deposition on such mat forming surface.

4,284,596

PROCESS FOR PRODUCING FOAMED ARTICLES OF AROMATIC POLYESTERS

Norio Inokuchi, Hino; Teruhisa Fukumoto, and Yoshio Mori, both of Sagamihara, all of Japan, assignors to Teitin Limited, Osaka, Japan

Filed Jan. 8, 1980, Ser. No. 110,399
Claims priority, application Japan, Sep. 21, 1979, 54-120808
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—45.3 **8 Claims**



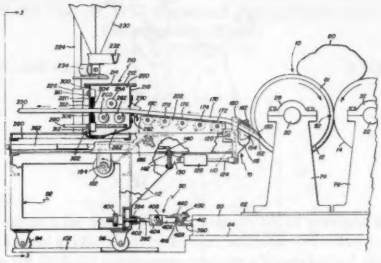
1. A process for producing a foamed article of an aromatic polyester by mixing an aromatic polyester, 0.05 to 5% by weight, based on the aromatic polyester, of an epoxy compound which has two or more epoxy groups, 0.05 to 3% by weight based on the aromatic polyester, of a metal compound selected from the group consisting of organic acid salts, inorganic acid salts, and oxides of a metal of Group Ia, IIa or IIIa of the periodic table, and 0.05 to 30% by weight, based on the aromatic polyester, of a blowing agent in a melt extrusion shaping machine while introducing the blowing agent thereinto under pressure, said process comprising mixing said materials with a fibrous filler in said melt extrusion shaping machine, then extruding the molten mixture from said extrusion shaping machine, further expanding the extruded and unsolidified foamed article in an atmosphere maintained at reduced pressure, and solidifying said article by cooling in an atmosphere maintained at reduced pressure.

4,284,597

APPARATUS FOR STRIPPING A SOLID MASS IN A STRIP FROM A MILL

Edward I. Stein, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 13, 1979, Ser. No. 20,129
Int. Cl.³ B29H *21/04, 21/06*
U.S. Cl. 264—130 **14 Claims**



1. An apparatus for stripping continuously a solid mass in a strip from a two roll mill comprising;

a frame with a first end and a second end opposite said first end;

a two roll mill located adjacent said first end of said frame;

knife means at said first end of said frame adapted to cut a strip of solid mass from said two roll mill;

first roller means on said frame adjacent said knife means for passing back said cut strip of solid mass toward the second end of said frame opposite said first end;

dusting means adjacent said first roller means through which said cut strip of solid mass passes adapted to dust said cut strip of solid mass with powder;

second roller means in said dusting means for carrying the cut strip of solid mass through said dusting means from said first roller means and passing said cut strip of solid mass to the second end of same frame.

14. A process for continuously stripping solid mass from a two roll mill, in a strip; dusting the strip with talc for subsequent packaging the strip comprising passing the solid mass on said two roll mill in a contact with an apparatus for stripping continuously a solid mass in a strip from a two roll mill comprising;

a frame with a first end and a second end opposite said first end

a two roll mill located adjacent said first end of said frame;

knife means at said first end of said frame adapted to cut a strip of solid mass from said two roll mill;

cutting a strip and passing the strip to first roller means on said frame adjacent said knife means for passing back said cut strip of solid mass toward the second end of said frame opposite said first end;

passing said strip to dusting means adjacent said first roller means through which said cut strip of solid mass passes adapted to dust said cut strip of solid mass with powder;

dusting said strip by passing to second roller means in said dusting means for carrying the cut strip of solid mass through said dusting means from said first roller means and passing said cut strip of solid mass to the second end of same frame.

4,284,598

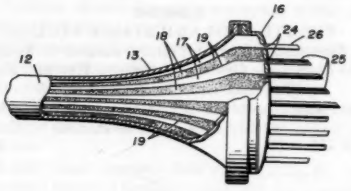
METHOD FOR MAKING BICOMPONENT FILAMENTS

James P. Craig, Jr., Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 25, 1980, Ser. No. 124,379
Int. Cl.³ B29F *3/10*
U.S. Cl. 264—171 **5 Claims**

1. The method of making bicomponent filaments from two different spin dopes, comprising

a. assembling said dopes into alternating layers in a feed tube connected to a transition tube leading to a spinnerette having a diameter greater than the diameter of the tube;
b. and feeding the dope layers from the feed tube through



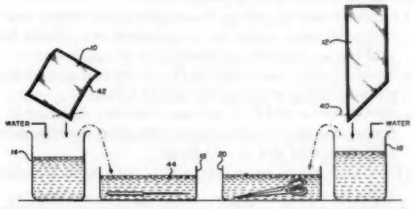
the transition tube and the spinnerette to form filaments, said transition tube having a parabolic configuration such that the linear rate of flow of the dope layers through said transition tube decreases at a uniform rate along the length of the transition tube.

4,284,599

STERILIZATION SYSTEM

Harold W. Andersen; Shirley R. Andersen, both of Oyster Bay; Clifford Zaner, Holbrook, and Charles H. Harrison, Oyster Bay, all of N.Y., assignors to Anprosol Incorporated, Oyster Bay, N.Y.

Division of Ser. No. 924,018, Jul. 12, 1978, abandoned. This application Mar. 23, 1979, Ser. No. 23,494
Int. Cl.³ C23F *11/18*
U.S. Cl. 422—18 **19 Claims**



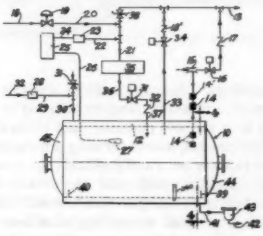
1. A method of sterilizing medical articles including metal medical articles comprising:
(I) storing separately a hypochlorite phosphates, and a non-ionic surfactant which is compatible with chlorine and said phosphates, each in a separate sealed compartment in a multi-compartment package,
(II) maintaining said components in said sealed compartments of said package in an inactivated condition thereby prolonging shelf-life until ready for use,
(III) releasing and transferring said components from said multi-compartment package into a vessel at the time sterilization is to be effected.
(IV) simultaneously with step (III) effecting mixing said components to thereby activate the components and provide in said vessel an activated sterilizing solution which is substantially non-irritating to tissue and which comprises 0.02 to 1% of said hypochlorite, 1.4 to 20% of said phosphates as di(alkali metal) phosphate and 0.08% to 21% as mono(alkali metal) phosphate, and 0.1 to 0.5% of said nonionic surfactant which is compatible with chlorine and said phosphates, with the proviso that the lower limit of said di(alkali metal) phosphate is 4% when the amount of said hypochlorite is from 0.5 to 1%, said percentages being based on weight (in grams) per 100 ml. of solution, and
(V) contacting said medical articles with said sterilizing solution to effect sterilization free of deleterious effects on said metal medical articles.

4,284,600

METHOD FOR BIOHAZARD STEAM STERILIZATION

John R. Gillis, Harborcreek; Peter Miraldi, Erie, both of Pa., and Marius X. Stavers, Scotch Plains, N.J., assignors to American Sterilizer Company, Erie, Pa.

Filed Dec. 6, 1979, Ser. No. 100,739
The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.
Int. Cl.³ A61L *2/06, 2/26*
U.S. Cl. 422—26 **5 Claims**



1. A method of sterilizing comprising,
providing a chamber having no drain line, said chamber having a steam line with a first check valve in said steam line,
an opening above the bottom of said chamber with an evacuating means connected thereto.
and a second check valve and filter connected in series between said evacuating means and said opening,
loading said chamber with highly infectious material to be sterilized,
evacuating said chamber and said filter through said opening through said filter and through said second check valve to a subatmosphere pressure by said evacuating means, admitting steam to said chamber and raising the temperature of said chamber to sterilizing temperature,
maintaining said sterilizing temperature in said chamber for a period of time sufficient to accomplish sterilization,
and removing said material from said chamber.

4,284,601

SURFACTANT FOAMS AND THEIR USE

Dong M. Chay, and David J. Haack, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 18, 1980, Ser. No. 178,783
Int. Cl.³ B01J *11/18;* C09K *3/00*
U.S. Cl. 422—40 **15 Claims**

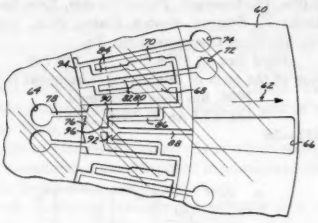
1. A method of preventing fumes from a fumable material that has been exposed to the atmosphere from escaping in the atmosphere comprising covering the fumable material with a foam prepared from a composition which comprises an aqueous mixture of ammonium lauryl sulfate, methyl polyoxyethylene cocoamine chloride, dimethyl cocoamine oxide and polyvinyl alcohol in a proportion in parts by weight, 100% basis, of 7–35, 25–55, 20–35 and 2.5–7.5, respectively with enough water and air to give foam density of from 0.005–0.130 g/cc.

4,284,602

INTEGRATED FLUID MANIPULATOR

Arden A. Kelton, Westminster; William P. Waters, Newport Beach; David G. Shrunk, Poway, and Michael L. Bell, Hacienda Heights, all of Calif., assignors to Immutron, Inc., Newport Beach, Calif.

Filed Dec. 10, 1979, Ser. No. 101,807
Int. Cl.³ B04B *5/12;* **G01N** *21/07*
U.S. Cl. 422—72 **4 Claims**



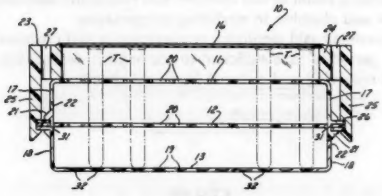
1. In centrifugal chemical-medical analysis apparatus, the combination of: a rotatable element adapted to be mounted on and rotated by a suitable machine, said element being formed with fluid inlet means; means forming a measuring chamber in said element radially outwardly of said inlet means and conduit means interconnecting said inlet means and said measuring chamber; said element being further formed with a vented fluid outlet means from said measuring chamber; a passageway connected to said conduit means and in communication with said measuring chamber through said conduit means; and overflow outlet means communicating with said passageway, said overflow outlet means being radially located with respect to said measuring chamber to control the filling level in said measuring chamber.

4,284,603

TEST TUBE DECANTER RACK

Gordon K. Korom, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 8, 1980, Ser. No. 147,882
Int. Cl.³ B01L *9/06;* **B01D** *35/02*
U.S. Cl. 422—101 **6 Claims**



1. A laboratory apparatus which permits simultaneous decantation of the liquid contents of a plurality of vertically aligned test tubes which comprises:

a top portion having a horizontal plate with a plurality of apertures;

a middle portion having a horizontal plate with a plurality of apertures;

a bottom portion having a horizontal plate with a plurality of depressions to provide seats for the bottoms of test tubes;

a pair of sidewalls which are operatively associated with said top, bottom and middle portions so as to vertically align the apertures and depressions;

and

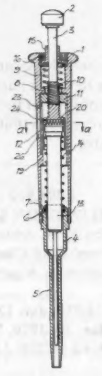
a porous retaining means constructed and arranged to span said top portion so as to retain test tubes in an inverted rack while permitting decantation of liquid contents of said tubes while retaining a solid phase within the tube and having marginal end portions extending around and engaging with said sidewalls.

4,284,604

PIPETTE WITH ADJUSTABLE VOLUME

Jukka Tervamäki, Helsinki, Finland, assignor to Kommandiittiyhio Finnpipette Osmo A Suovaniemi, Helsinki, Finland

Filed May 31, 1979, Ser. No. 44,155
Claims priority, application Finland, Jun. 2, 1978, 781764
Int. Cl.³ B03C *1/00;* **B01L** *3/02*
U.S. Cl. 422—100 **4 Claims**



1. An adjustable pipette comprising:

a tubular frame including an elongated slot therein said slot being disposed along the longitudinal axis of said frame, said frame including an opening at its upper end;

a tip releaseably connected to the lower end of said frame;

a piston slidably reciprocable in said frame;

a tubular sleeve slidablly and non-rotatably disposed in said frame, said sleeve including an elongated slot aligned with said elongated slot in said frame;

a bushing disposed within said sleeve, said bushing including a threaded opening;

an adjustment rod slidably mounted in the upper portion of said frame and coupled for movement with said piston, the upper end of said adjustment rod extending through the opening at the upper end of said frame and having means to permit manual actuation thereof; the lower end of said adjustment rod including threading engageable with said threading in said bushing; and

an extension disposed at the end of said threaded portion of said rod, said extending being disposed within said sleeve, said extension including indicator means and means for biasing said indicator means into said slot in said sleeve to thereby provide a visual indication of the relative position of said actuation rod and said sleeve and thus the volume of fluid to be drawn into said pipette, as well as to provide resistance to the turning of said adjustment rod with respect to said sleeve.

4,284,605

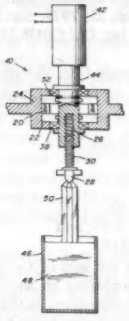
LINEAR DRIVE SHAFT SEAL

Michel A. Pierrat, Andover, Mass., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed May 14, 1980, Ser. No. 149,141
Int. Cl.³ C30B *15/30, 35/00;* **F16J** *15/56*
U.S. Cl. 422—249 **11 Claims**

1. A linear drive-shaft sealing apparatus useful for magnetic isolation of a linear-motion drive shaft from a driving means, the apparatus comprising:

(a) a first input drive shaft adapted for connection to the driving means and for linear motion thereby;
(b) a magnetically permeable, cylindrical element capable of rotary motion;
(c) a first means to convert the linear motion of the input drive shaft by the driving means into rotary motion of the cylindrical element;
(d) a housing surrounding the cylindrical element, and defining an annular space therebetween;
(e) a second, isolated, output drive shaft;
(f) a second means to reconvert the rotary motion of the cylindrical element to linear motion of the second drive shaft; and
(g) a multiple-stage, magnetic-fluid seal to isolate the second drive shaft from the first drive shaft, the seal comprising:



(i) a permanent ring magnet disposed within the housing and surrounding the cylindrical element;
(ii) one or more magnetically permeable pole pieces adjacent to the magnet and defining in the space between the housing and the cylindrical element a plurality of gaps, across which gaps the flux of the magnetic field passes; and
(iii) magnetic fluid captured within the gaps to provide a plurality of close, but separate, seal stages, whereby the second drive shaft is driven in a linear manner by the driving means, but is isolated therefrom by the multiple-stage magnetic fluid seal between the housing and the cylindrical element.

4,284,606

EXTRACTION

John S. Rendell, Stanford-le-Hope, and Maurice J. Cahalan, Whitchurch, both of England, assignors to RTL Contactor Holding S.A., Zug, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,776

Claims priority, application United Kingdom, Nov. 25, 1977, 49179/77

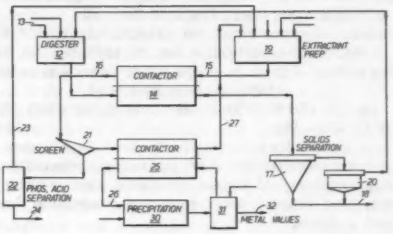
Int. Cl.³ C01G *43/00*; C01B *25/01*

U.S. Cl. 423—6 **10 Claims**

1. A process for the extraction of phosphoric acid and metal values from phosphate rock comprising

acidulating the phosphate rock to convert the phosphate of the rock into phosphoric acid;

contacting a slurry of the acidulated rock with selective extractants for phosphoric acid and metal values contained in the slurry;



removing the extractants substantially independently of the solids of the slurry; and

recovering the phosphoric acid and metal values.

4,284,607

CHLORINATION OF ALUMINOUS MATERIALS USING PRESELECTED SOLID REDUCING AGENTS

Charles J. Culleiton, Tarentum; Subodh K. Das, Apollo, both of Pa., and Ronald C. Schoener, Colville, Wash., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 10, 1979, Ser. No. 73,925

Int. Cl.³ C01F *7/60*

U.S. Cl. 423—137 **11 Claims**

1. A process for the chlorination of aluminous material which comprises reacting aluminous material with chlorine at a temperature of from 575° to 750° C. in the presence of a solid reducing agent obtained by calcining green petroleum coke at a temperature from 650° to 900° C. for a period of from 10 to 120 minutes.

4,284,608

PROCESS FOR REGENERATING SULFUR DIOXIDE GAS SCRUBBING SOLUTIONS

Leopold Pessel, Wyndmoor, Pa., assignor to American Electronic Laboratories, Inc., Lansdale, Pa.

Continuation-in-part of Ser. No. 816,293, Jul. 18, 1977, Pat. No. 4,157,988, which is a division of Ser. No. 678,291, Apr. 19, 1976, Pat. No. 4,091,075, which is a continuation-in-part of Ser. No. 545,928, Jan. 31, 1975, Pat. No. 4,070,441. This application Dec. 26, 1978, Ser. No. 973,255

The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **6 Claims**

1. In a one-step process of removing sulfur dioxide from a gas stream by contact with an aqueous scrubbing solution of a metal salt providing ferric ions, the metal salt being reacted stoichiometrically with sulfur dioxide to reduce the ferric ions of the metal salt to ferrous ions, with the concurrent formation of sulfuric acid which dissolves in the solution, and including as a second step the regeneration of the solution by oxidation of the ferrous ions of the reduced metal salt to ferric ions, thus permitting continuous or repeated use of the solution, the improvement comprising effecting the regeneration of the solution by anodic oxidation of the ferrous ions of the reduced metal salt.

4,284,609
CONDENSATION CLEANING OF PARTICULATE LADEN GASES

Egbert deVries, Kettering, Ohio, assignor to Quad Environmental Technologies Corp., Highland Park, Ill.

Continuation-in-part of Ser. No. 814,420, Jul. 11, 1977, Pat. No. 4,141,702. This application Jan. 24, 1979, Ser. No. 6,015

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.[3] **C01B** *17/00;* **B01D** *47/00, 45/00;* **C01B** *17/16*

U.S. Cl. 423—242 **24 Claims**

1. A method for removing finely divided particulate matter and other contaminants from gas streams selected from the group consisting of furnace emissions, steel industry waste gases, food industry waste gases and combustion flue gases which comprises:

humidifying the gas stream with water;

subjecting the humidified gas stream to indirect contact heat exchange sufficient to lower the gas stream to a temperature below its dew point, thereby condensing water on the surfaces of said particulate matter, and to provide an energy transfer for condensation of water vapor in said gas stream of at least 5 hp per 1000 cfm, said heat exchange being accomplished by passing said humidified gas stream directly to and downwardly through a heat exchange element having smooth and essentially vertical gas passages of relatively large dimension thereby causing migration of said particulate matter from the gas stream to the surfaces of said heat exchange element;

separating condensed water, now containing particulate matter, from the gas stream, and

recovering a gas stream substantially depleted of particulate matter.

4,284,610
BN BONDED BN FIBER ARTICLE AND METHOD OF MANUFACTURE

Robert S. Hamilton, Youngstown, N.Y., assignor to Kennecott Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 968,070, Dec. 11, 1978, abandoned, and Ser. No. 913,916, Jun. 8, 1978, abandoned, each is a continuation of Ser. No. 773,588, Mar. 2, 1977, Pat. No. 4,130,631, and Ser. No. 773,587, Mar. 2, 1977, abandoned. This application Mar. 20, 1979, Ser. No. 22,251

The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

Int. Cl.[3] **C01B** *35/08;* **H01M** *8/02*

U.S. Cl. 423—290 **28 Claims**

1. A method for manufacturing a boron nitride article comprising:

(a) blending from about 0.5 to about 40 weight percent of a bonding compound selected from the group consisting of boron oxide, boric acid and mixtures thereof with from about 60 to about 99.5 weight percent of structural fiber manufactured from boron oxide, partially nitrided boron oxide, boron nitride or mixtures of such fibers in an anhydrous fluid vehicle in which the bonding compound and the structural fiber are insoluble, the bonding compound having a lower melting temperature than the melting or decomposition temperature of the structural fiber;

(b) forming a shaped article with the resulting blend and removing sufficient fluid vehicle to permit intimate contact of the structural fiber with the bonding compound;

(c) heating the shaped article in an anhydrous gas selected from the group consisting of inert gases, nitrogen, ammonia, carbon dioxide and mixtures thereof to a temperature above the melting temperature of the bonding compound and below the melting or decomposition temperature of the structural fiber for a time sufficient to melt at least some of the bonding compound to the structural fibers; and

(d) heating the shaped article in an ammonia atmosphere to a sufficient temperature and for a sufficient time to convert the bonding compound and structural fibers to boron nitride.

24. An article having sufficient flexibility that samples 3 mm thick show no apparent cracking or deterioration when bent around a 1.5 cm diameter rod; said article comprising boron nitride fibers bonded together with from about 25 to about 70 percent by weight of article of boron nitride bonds, essentially all of said bonds having smooth non-porous surfaces.

4,284,611
AQUEOUS PHOSPHATE-STABILIZED POLYALUMINUM SULFATE SOLUTIONS AND PREPARATION THEREOF

Alan B. Gancy, Syracuse, and Christian A. Wamser, Camillus, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 25, 1979, Ser. No. 60,260

Int. Cl.[3] **C01B** *25/36*

U.S. Cl. 423—308 **15 Claims**

1. An aqueous chloride-free, phosphate-stabilized polyaluminum sulfate solution, useful as a coagulant in water treatment, having the formula:

$$Al(OH_x)(SO_4)_y(H_2PO_4)_z$$

wherein

x is about 1.2 to 1.62;

y is about 0.595 to 0.87; and

z is about 0.06 to 0.19,

with the proviso that the sum of $x+2y+z$ is 3.

8. A process for preparing an aqueous chloride-free, phosphate stabilized polyaluminum sulfate solution, useful as a coagulant in water treatment, having the formula:

$$Al(OH_x)(SO_4)_y(H_2PO_4)_z$$

wherein

x is about 1.2 to 1.62;

y is about 0.595 to 0.87; and

z is about 0.06 to 0.19,

comprising blending an overbasified aqueous chloride-free phosphate-stabilized polyaluminum sulfate solution with an aqueous chloride-free, alum solution, with the proviso that the sum of $x+2y+z$ is 3.

13. A process for preparing an aqueous chloride-free, phosphate-stabilized polyaluminum sulfate solution, useful as a coagulant in water treatment, of a composition having the formula:

$$Al(OH)_x(SO_4)_y(H_2PO_4)_z$$

wherein

x is about 1.2 to 1.62;

y is about 0.595 to 0.87; and

z is about 0.06 to 0.19

which comprises:

reacting $Al_2O_3.nH_2O$, wherein n is at least 3, with chloride-free phosphoric acid, in a ratio of about 3 to 10 moles of H_3PO_4 per mole of $Al_2O_3.nH_2O$; and

mixing the resultant reaction product with an aqueous chloride-free polyaluminum sulfate solution, with the proviso that the sum of $x+2y+Z$ is 3.

4,284,612
PREPARATION OF SIC WHISKERS

Ottis J. Horne, Jr., Johnson City, and Lloyd I. Grindstaff, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,683

Int. Cl.[3] **C01B** *31/36*

U.S. Cl. 423—345 **16 Claims**

1. A process for the manufacture of SiC whiskers comprising the steps of:

(1) Selecting an organic fiber from the group consisting of polymers, copolymers, and terpolymers of acrylonitrile oxidized in air at a temperature from 200° to 400° C.;
(2) Grinding or chopping the fiber obtained in step 1 to form a short fiber of approximately 10 to 100μ length;
(3) Mixing the ground fiber obtained above with amorphous SiO_2;
(4) Placing the mixture obtained above in a furnace and increasing the temperature to a carbide-forming temperature within the range of of 1400° to 1800° C. in a non-oxidizing atmosphere;
(5) When the temperature reaches said carbide-forming temperature, maintaining the mixture at that temperature in an atmosphere of inert gas for a period of 1 to 4 hours; and
(6) Removing the product from the furnace.

12. A process for the manufacture of SiC whiskers comprised of:
(1) Ashing rice hulls at a temperature from about 400° to 700° C. to form amorphous SiO_2;
(2) Mixing the ash with ground fibers from 10 to 100μ in length selected from the group consisting of polyacrylonitrile fibers oxidized in air at 200° to 400° C., carbonized polyacrylonitrile fibers, graphitized polyacrylonitrile fibers, graphitized viscose rayon, carbonized mesophase petroleum pitch fibers, and fibrous alpha-cellulose carbonized in a nonoxidizing atmosphere;
(3) Placing the mixture obtained in an inert atmosphere of argon;
(4) Increasing the temperature at a rate of from 100° C. to 200° C. per minute from ambient to a carbide-forming temperature between 1400° C. and 1800° C., holding the mixture at that temperature in argon for a period of approximately one hour to form SiC whiskers; and
(5) Removing the product from the heating chamber.

4,284,613

PROCESS FOR AMMONIATING PHOSPHORIC ACID

Donald M. Martin, and Peter A. Rowe, both of Ipswich, England, assignors to Fisons Limited, London, England

Filed Oct. 4, 1979, Ser. No. 81,817
Claims priority, application United Kingdom, Oct. 7, 1978, 39732/78
Int. Cl.³ C01B *25/28*
U.S. Cl. 423—310 **8 Claims**

1. A process for ammoniating phosphoric acid which comprises reacting ammonia with phosphoric acid under pressure in an agitated tank reaction vessel to form a reaction mixture comprising ammonium phosphate characterised in that the reaction mixture is circulated within the reaction vessel and allowed to foam whereby there is formed a foaming reaction mixture comprising steam and ammonium phosphate; and in that steam and ammonium phosphate are discharged from the reaction vessel through a common outlet which outlet has means for controlling pressure within the reaction vessel.

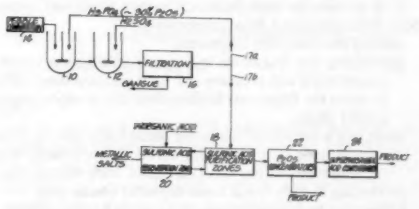
4,284,614

PROCESS FOR PRODUCTION OF HIGH PURITY PHOSPHORIC ACID FROM HIGH ALUMINA PHOSPHATE PEBBLE ROCK

Fernando Ore, Whittier, Calif., assignor to Occidental Petroleum Corp., Irvine, Calif.

Continuation-in-part of Ser. No. 676,559, Apr. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,687, Jun. 4, 1975, abandoned, which is a continuation of Ser. No. 301,085, Oct. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 204,670, Dec. 3, 1971, abandoned. This application May 1, 1980, Ser. No. 145,641
Int. Cl.³ C01B *25/46, 25/22*
U.S. Cl. 423—321 S **29 Claims**

1. A process for the purification of phosphoric acid obtained from the digestion of phosphate bearing rock containing metal impurities which comprise calcium, magnesium, aluminum, ferric iron, and ferrous iron, which process comprises:
(a) contacting high alumina phosphate pebble rock having a bone phosphate of lime value less than about 68 with aqueous phosphoric acid containing from about 10% up to about 35% P_2O_5 at an elevated temperature of from about 140° F. to about 220° F. to form a reaction mass containing extracted phosphate values from the phosphate pebble rock in the form of monocalcium phosphate and a residual solid phosphate pebble rock gangue;
(b) contacting the reaction mass with concentrated sulfuric acid comprising from about 90% to about 100% H_2SO_4 at an elevated temperature of from about 140° F. to about 220° F. to convert the monocalcium phosphate to solid calcium sulfate and phosphoric acid and form a crude phosphoric acid containing solid calcium sulfate, metal impurities selected from the group consisting of calcium, magnesium, aluminum, ferric iron and ferrous iron and solid phosphate pebble rock gangue;



(c) separating the crude phosphoric acid containing the ionic metal impurities from the solid phosphate pebble rock gangue and the solid calcium sulfate;
(d) contacting the crude phosphoric acid containing ionic metal impurities with a water-immiscible organic solvent containing a water-immiscible organic sulfonic acid compound selected from the group consisting of alkylaryl, polyalkylaryl, alkanoylaryl, polyalkanoylaryl sulfonic acids and aromatic ring-substituted derivatives thereof wherein the substituent is selected from fluoro, bromo, chloro, iodo, hydroxy, alkoxy and omegacarboxyalkoxy groups to extract ionic metal impurities and form:
(i) a water-immiscible organic phase containing the organic sulfonic acid compound containing extracted ionic metal impurities; and
(ii) an aqueous phase containing a purified phosphoric acid; and
(e) separating the aqueous phase containing the purified phosphoric acid from the water-immiscible organic phase containing the organic sulfonic acid compound containing extracted ionic metal impurities.

4,284,615

PROCESS FOR THE PRODUCTION OF CARBON FIBERS

Kunio Maruyama, Okayama, Japan, assignor to Japan Exlan Company, Ltd. and Sumitomo Chemical Company Limited, both of Osaka, Japan

Filed Mar. 6, 1980, Ser. No. 127,980
Claims priority, application Japan, Mar. 8, 1979, 54-27436
Int. Cl.³ D01F *9/12, 9/16, 9/22*
U.S. Cl. 423—447.4 **5 Claims**

1. An improved process for the production of carbon fibers characterized by fixing 0.1–5 weight % of a chemical substance selected from the group consisting of glycerin, polyethylene glycol, polypropylene glycol, and alkyl derivatives thereof, and mixtures or compounds of two or more of these chemical substances onto thermally stabilized carbon precursor fibers and/or carbonized fibers to give the fibers good collectivity, and carbonizing the thermally stabilized fibers and/or graphitizing the fibers, said alkyl derivatives being selected from ether compounds obtained by reacting said

chemical substances with an alcohol selected from the group consisting of methyl alcohol, ethyl alcohol, propyl alcohol, butyl alcohol, pentanol and hexanol or ester compounds obtained by reacting said chemical substances with an organic acid selected for the group consisting of formic acid, acetic acid, oxalic acid, malonic acid, succinic acid, butyric acid, lactic acid and malic acid.

4,284,616
PROCESS FOR RECOVERING CARBON BLACK AND HYDROCARBONS FROM USED TIRES

Age Solbakken, Montgomery; Fred P. Apffel, Houston; Sam P. Robinson, Houston, and Bobby L. Hayes, Houston, all of Tex., assignors to Intenco, Inc.

Continuation-in-part of Ser. No. 878,088, Feb. 15, 1978. This application Jan. 15, 1979, Ser. No. 3,655

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.[3] **C01B** *31/02, 31/00;* **C09C** *1/48*

U.S. Cl. 423—461 **37 Claims**

1. A process for manufacturing carbon black and hydrocarbons from discarded tires, comprising:

cutting the tires into fragments;

pyrolyzing the fragments in a pyrolysis reaction vessel at a temperature and pressure and for a reaction time sufficient to cause the fragments to dissociate into a vapor phase and a solid phase;

recycling a portion of said solid phase back into the reactor;

said pyrolizing step including indirectly, internally heating the fragments in the reaction vessel with molten salt;

producing carbon black from the solid phase; and

processing said vapor phase to produce hydrocarbons.

4,284,617
SOLID COMPOSITIONS FOR GENERATION FLUORINE AND GASEOUS FLUORINE COMPOUNDS

Richard E. Bowen, Woodbridge, Va.; Robert A. Robb, Bryans Road, Md.; Ottmar H. Dengel, Front Royal, Va.; Carl Gotzmer, Accokeek, and Frank J. Pisacane, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1979, Ser. No. 99,053

Int. Cl.[3] **C01B** *7/20;* **C06B** *35/00*

U.S. Cl. 423—504 **13 Claims**

1. Solid compositions for generating fluorine and gaseous fluorine containing compounds comprising:

(a) a fluorine containing inorganic oxidizing salt

(b) an alkali metal fluoride complexing agent

(c) a primary fuel selected from the group consisting of metals, and metal nitrides and metal azides

(d) a fluorine releasing coolant.

4,284,618
PRODUCTION OF BATTERY-GRADE MANGANESE DIOXIDE

Andre van der Heyden, Olen; Marc Coussement, Hove, and Antoine Van Peteghem, Olen, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Oct. 22, 1979, Ser. No. 86,713

Claims priority, application Luxembourg, Nov. 6, 1978, 80477

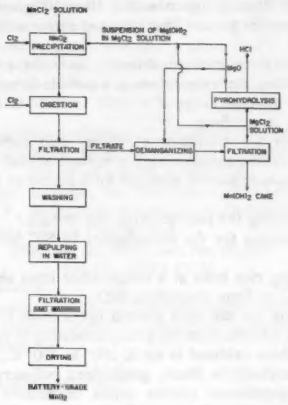
Int. Cl.[3] **C01G** *45/02*

U.S. Cl. 423—605 **15 Claims**

1. A process for the production of battery-grade manganese dioxide which comprises:

(a) contacting a manganese chloride solution with chlorine, while maintaining the pH of the solution between 0.5 and 3 by adding MgO and/or $Mg(OH)_2$ so as to thereby produce a $MgCl_2$ solution poor in manganese and which contains a MnO_2 precipitate that is contaminated by magnesium, the operating conditions being such that the produced $MgCl_2$ solution contains at least 85 g./l. of magnesium,

(b) allowing the MnO_2 precipitate to digest in said $MgCl_2$ solution in the presence of chlorine under pressure in an autoclave so as to reduce substantially the magnesium content of said MnO_2 precipitate,



(c) separating the digested MnO_2 precipitate from the $MgCl_2$ solution,

(d) washing and drying the MnO_2 precipitate.

4,284,619
ESTERS USEFUL AS BRAIN IMAGING AGENTS

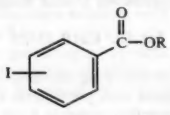
Tz-Hong Lin, Fremont, Calif., assignor to Medi-Physics, Inc., Emeryville, Calif.

Filed Nov. 29, 1978, Ser. No. 964,563

Int. Cl.[3] **A61K** *49/00, 43/00;* **C07C** *69/76*

U.S. Cl. 424—1.5 **6 Claims**

1. A method of imaging the brain comprising intravenously injecting into a patient an effective amount of a composition comprising a compound of the formula



wherein I is a radioisotope of iodine, and R is selected from the group consisting of alkyl, aryl, substituted aryl, aralkyl, a polyhydric alcohol, and a 5- or 6-membered heterocyclic ring, in a carrier suitable for intravenous injection and scanning the brain with a scintiscanning means.

4,284,620
N-(2-HYDROXYETHYL)-2,4,6-TRIIODO-3,5-BIS-(2-KETO-L-GULONAMIDO)BENZAMIDE AND RADIOLOGICAL COMPOSITIONS CONTAINING SAME

Youlin Lin, Chesterfield, and Kenneth R. Smith, Black Jack, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Mar. 23, 1979, Ser. No. 23,506

Int. Cl.[3] **A61K** *49/04;* **C07H** *5/06*

U.S. Cl. 424—5 **5 Claims**

1. N-(2-Hydroxyethyl)-2,4,6-triiodo-3,5-bis-(2-keto-L-gulonamido)benzamide.

2. A radiological composition containing N-(2-hydroxyethyl)-2,4,6-triiodo-3,5-bis-(2-keto-L-gulonamido) benzamide in a sufficient amount to provide satisfactory x-ray visualization together with a pharmaceutically acceptable radiological vehicle.

3. In a method for x-ray visualization wherein a radiological

composition containing an x-ray contrast agent in a pharmaceutically acceptable radiological vehicle is injected in a sufficient amount to provide adequate visualization and thereafter x-ray visualization carried out, the improvement comprising utilizing as the radiological composition a composition containing N-(2-hydroxyethyl)-2,4,6-triiodo-3,5-bis-(2-keto-L-gulonamido)benzamide in a sufficient amount to provide satisfactory x-ray visualization together with a pharmaceutically acceptable radiological vehicle.

5. 3,5-Bis-(2,3:4,6-di-O-isopropylidene-2-keto-L-gulonamido)-N-(2-hydroxyethyl)-2,4,6-triiodobenzamide.

4,284,621
AGENTS FOR PROTECTION AGAINST LIGHT

Reinhard Preuss, Krefeld; Egbert Charlet, Roesrath; Peter Finkel, Cologne, and Hans J. Rosenkranz, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

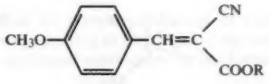
Filed Mar. 28, 1979, Ser. No. 24,742

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816819

Int. Cl.[3] **A61K** *7/42, 7/44*

U.S. Cl. 424—59 **8 Claims**

1. A composition for protection against UV light in the UVA region having a wavelength range from 320 to 400 nm, comprising an oil or wax carrier having dissolved therein an effective UVA absorbing amount of a 4-methoxybenzylidenecyanoacetic acid ester of the formula



in which

R denotes a n-hexyl, n-octyl or n-decyl radical or a primary isoalkyl radical with 9 or 10 carbon atoms.

4,284,622
ATTRACTANT FOR SUNFLOWER MOTH

Edward W. Underhill; Warren F. Steck; Melvin D. Chisholm, and Alfred P. Arthur, all of Saskatoon, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Mar. 28, 1980, Ser. No. 135,077

Int. Cl.[2] **A01N** *17/14*

U.S. Cl. 424—84 **11 Claims**

1. A method of attracting male sunflower moths *Homoeosoma electellum,* during the flight period and in the expected locale of such moths, to specific loci or to disseminated attractant; comprising distributing by one of (a) providing at each locus and (b) disseminating, an attractant consisting essentially of Z-9, E-12-tetradecadien-1-ol, in an amount effective to attract such moths.

4,284,623
METHOD OF TREATING INFLAMMATION USING BOVINE MILK

Lee R. Beck, 2550 Dunmore Place, Birmingham, Ala. 35226

Filed Nov. 9, 1979, Ser. No. 92,957

Int. Cl.[3] **A61K** *39/395*

U.S. Cl. 424—85 **16 Claims**

1. A method of treating inflammation in an animal which comprises administering to said animal an anti-inflammatory effective amount of milk collected from a bovid being maintained in an anti-inflammatory factor producing state; wherein said inflammation is caused by a condition selected from the group consisting of acute and subacute bursitis, acute nonspecific tendonitis, systemic lupus erythematosus, systemic dermatomyositis, acute rheumatic carditis, pemphigus, bullous dermatitis, hepetiformis, severe erythema, multiform exfoliative dermatitis, cirrhosis, seasonal perennial rhinitis, bronchial asthma, etopic dermatitis, serum sickness, keratitis, opthalmicus iritis, diffuse ureitis, choriditis, optic neuritis, sympathetic opthalmia, symptomatic sarcoidosis, Loeffler's Syndrome, berylliosis and hemolytic anemia.

4,284,624
MIXED DISULFIDES

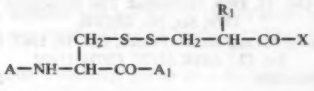
Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 2, 1980, Ser. No. 146,729

Int. Cl.[3] **A61K** *31/40;* **C07D** *207/416*

U.S. Cl. 424—177 **8 Claims**

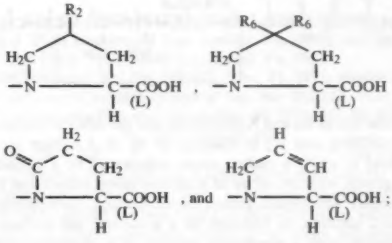
3. A composition for treating hypertension comprising a pharmaceutically acceptable carrier and an effective amount of one or more hypotensive agents or pharmaceutically acceptable salts thereof of the formula



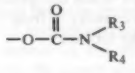
wherein

A and A_1 are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, lysyl, arginyl, and prolyl, said A residue being joined through a carbonyl group and said A_1 residue being joined through an amino group;

X is an α-imino acid residue selected from the group consisting of



R_2 is hydrogen, hydroxy, lower alkyl, halogen, keto,



or —Y—R_5;

Y is O or S;

R_5 is lower alkyl, phenyl, phenyl-lower alkylene, 1- or 2-naphthyl, biphenyl, substituted phenyl, substituted phenyl-lower alkylene, substituted 1- or 2-naphthyl, or substituted biphenyl wherein said substituent is on the phenyl ring and is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy, and hydroxy;

R_6 is halogen or —Y—R_7;

R_7 is lower alkyl, phenyl, phenyl-lower alkylene, substituted phenyl, or substituted phenyl-lower alkylene wherein said substituent is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy, and hydroxy, or the

R_7 groups join in an alkylene chain of 2 or 3 carbons to complete a 5- or 6-membered ring or said ring in which one of the carbon atoms has a lower alkyl or di(lower alkyl)substituent; and

R_3 and R_4 are independently selected from the group consisting of hydrogen and lower alkyl.

4,284,625

NAPHTHACENE PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Georges Jolles, Sceaux, France, assignor to Rhone-Poulenc S.A., Paris, France

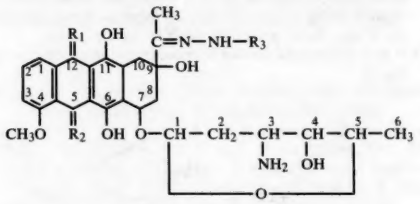
Division of Ser. No. 307,955, Nov. 20, 1972, Pat. No. 3,965,088, which is a continuation-in-part of Ser. No. 187,559, Oct. 7, 1971, Pat. No. 3,957,755, which is a continuation-in-part of Ser. No. 768,532, Oct. 17, 1968, abandoned. This application Jan. 27, 1976, Ser. No. 652,848

Claims priority, application France, Oct. 18, 1967, 67.124943

Int. Cl.[3] **A61K** *31/71;* **C07H** *15/22*

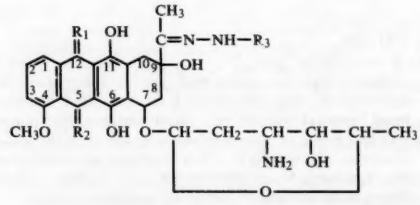
U.S. Cl. 424—180 **20 Claims**

1. A pharmaceutical composition for parenteral administration and useful for the treatment of acute myeloblastic leukaemia which comprises, as active ingredient, a naphthacene of the formula:



wherein one of R_1 and R_2 is oxygen and the other is oxygen or $=N—NHR_3$, and R_3 is alkanoyl of up to 4 carbon atoms, alkanoyl of up to 4 carbon atoms substituted by a sulphonic acid group, alkanoyl of up to 4 carbon atoms substituted by a quaternary ammonium group, thiocarbamoyl, methylthiocarbamoyl, amidino, or benzoyl, or a non-toxic salt thereof, in association with a significant amount of a sterile injectable pharmaceutically-acceptable carrier.

11. Method for the treatment of, acute myeloblastic leukaemia in a human patient which comprises administering parenterally to the patient a quantity of from 2 to 10 mg/kg per day of a naphthacene of the formula:



wherein one of R_1 and R_2 is oxygen and the other is oxygen or $=N—NHR_3$, and R_3 is alkanoyl of up to 4 carbon atoms, alkanoyl of up to 4 carbon atoms substituted by a sulphonic acid group, alkanoyl of up to 4 carbon atoms substituted by a quaternary ammonium group, thiocarbamoyl, methylthiocarbamoyl, amidino, or benzoyl, or a non-toxic salt thereof.

4,284,626

O-ARYL S-BRANCHED ALKYL ALKYLPHOSPHONODITHIOATE INSECTICIDES AND NEMATOCIDES

Mohamed A. Fahmy, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,329

Int. Cl.[3] **A01N** *57/022;* **C07F** *9/40*

U.S. Cl. 424—222 **22 Claims**

1. A method for controlling insects and nematodes which comprises applying thereto or their habitat a pesticidal amount of a compound of the formula

in which

R is an alkyl of 1 to 8 carbon atoms;

R_1 is phenyl or phenyl substituted with 1 to 4 members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, Cl, Br, F, nitro and trifluoromethyl; and

R_2 is a tertiary alkyl of 4 to 8 carbon atoms.

12. A compound of the formula

in which

R is an alkyl of 1 to 8 carbon atoms;

R_1 is phenyl or phenyl substituted with 1 to 4 members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, Cl, Br, F, nitro and trifluoromethyl; and

R_2 is a tertiary alkyl of 4 to 8 carbon atoms.

4,284,627

ANTIMALARIAL COMPOSITIONS

Wolfgang Raether, Dreieich; Walter Dürckheimer, Hattersheim am Main, and Hans Seidenath, Bad Nauheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 954,900, Oct. 26, 1978. This application Jul. 7, 1980, Ser. No. 166,295

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748333

Int. Cl.[3] **A61K** *31/625, 31/53, 31/505, 31/435*

U.S. Cl. 424—229 **3 Claims**

1. An anti-malarial composition containing as the active ingredient a mixture of 7-chloro-10-hydroxy-3-(4-trifluoromethyl-phenyl)-3,4-dihydroacridino-1,9-(2H, 10)-dione and N'-(5,6-dimethoxy-4-pyrimidyl)-sulfanilamide in a proportion by weight of between 1:1 and 1:32.

4,284,628
2-HYDROXY BENZAMIDE DERIVATIVES AND USE THEREOF AS A FUNGICIDE

Taizo Nakagawa; Seiji Mochizuki, both of Ageo; Kaoru Ohmori, Okegawa; Kengo Koike, Ageo; Mineo Maruyama, Ageo, and Eiichi Tanaka, Ageo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

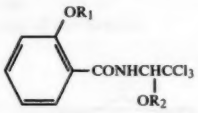
Filed Aug. 13, 1979, Ser. No. 65,910

Claims priority, application Japan, Aug. 25, 1978, 53-102789

Int. Cl.[3] A01N *37/26;* **C07C** *103/78*

U.S. Cl. 424—230 **19 Claims**

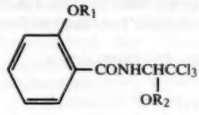
1. A compound represented by the formula:



(I)

wherein R_1 is hydrogen, lower alkyl carbonyl, lower alkoxy carbonyl, phenoxy carbonyl, lower alkyl sulfonyl or lower alkyl carbamoyl, R_2 is phenyl; phenyl substituted by one or more members selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkoxy carbonyl, halogen, formyl, cyano, thiocyano, nitro, lower alkyl sulfinyl, lower alkyl sulfonyl, lower alkyl carbonyl, acetylamino or phenyl; or naphthyl, with the proviso that when R_1 is hydrogen or lower alkyl carbonyl, R_2 is the said substituted phenyl or naphthyl.

11. A method for preventing diseases of plant caused by fungi comprising applying to said fungi a fungicidally effective amount of a compound represented by the formula:



(I)

wherein R_1 is hydrogen, lower alkyl carbonyl, lower alkoxy carbonyl, phenoxy carbonyl, lower alkyl sulfonyl or lower alkyl carbamoyl, R_2 is phenyl; phenyl substituted by one or more members selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkoxy carbonyl, halogen, formyl cyano, thiocyano, nitro, lower alkyl sulfinyl, lower alkyl sulfonyl, lower alkyl carbonyl, acetylamino or phenyl; or naphthyl, with the proviso that when R_1 is hydrogen or lower alkyl carbonyl, R_2 is said substituted phenyl or naphthyl.

4,284,629
PROCESS FOR THE PREPARATION OF 4-PYRIDONE-3-CARBOXYLIC ACIDS AND/OR DERIVATIVES THEREOF

Klaus Grohe, Odenthal; Hans-Joachim Zeiler, Velbert, and Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

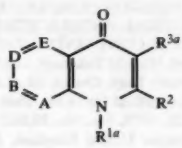
Filed Feb. 1, 1979, Ser. No. 8,634

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808070

Int. Cl.[3] A01N *43/84;* **C07D** *471/04, 413/04, 279/10*

U.S. Cl. 424—246 **18 Claims**

1. A compound of the formula



(VII)

or a salt thereof in which

R^{1a} denotes a cycloalkyl group having 3 to 7 carbon atoms or an amino group $—NR^4R^5$,

in which

R^4 and R^5 are identical or different, and denote a straight-chain or branched C_1 to C_4 alkyl group or, together with the nitrogen atom which they substitute, form a 5-membered to 7-membered ring,

R^2 denotes a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, an aralkyl group having 1 to 4 carbon atoms in the aliphatic part and 6 to 10 carbon atoms in the aromatic part or an aryl group having 6 to 10 carbon atoms and

R^{3a} denotes a carboxyl group or a derivative which is a nitrile, an ester or an acid amide,

the symbols A and D are nitrogen atoms and the symbols B and E remaining in each case represent a carbon atom which is unsubstituted or substituted by C_1 to C_6 alkyl, C_1 to C_4 alkoxy, C_1 to C_6 alkylmercapto, trifluoromethyl, halogen, cyano, carboxyl which is esterified by C_1 to C_4 alkyl, benzyl or phenyl each of which is unsubstituted or substituted by C_1 to C_3 alkyl, nitro or halogen, or amino substituted by carbalkoxy.

4,284,630
STABILIZED WATER-IN-OIL EMULSIONS

Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046

Continuation of Ser. No. 888,938, Mar. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 852,147, Nov. 16, 1977, abandoned. This application May 29, 1979, Ser. No. 43,266

Int. Cl.[3] A61K *31/58*

U.S. Cl. 424—241 **34 Claims**

1. A method for stabilizing a water-in-oil emulsion for topical application to the human body, so that said emulsion will be stable when stored for two months and stable when subjected to freezing with subsequent thawing to room temperature comprising: admixing an oil base dispersion medium, an emulsifying agent, and a water based, aqueous dispersed phase, and a stabilizing effective amount of up to about 2%, by weight, of a member selected from the group consisting of magnesium hydroxide and magnesium oxide.

30. A method for improving the efficacy of a medicinal compound selected from the group consisting of hydrocortisone, triamcinolone acetonide, and 6-aminonicotinamide which is effective to alleviate the symptoms of inflammatory skin diseases psoriasis and exzema by topical application to involved areas of the human body comprising:

providing a stabilized water-in-oil emulsion vehicle for said compound which is stable when stored for two months and stable when subjected to freezing with subsequent thawing to room temperature by admixing an oil based dispersion medium, an emulsifying agent, and a water based dispersion phase with a stabilizing agent present in a stabilizing effective amount of up to about 2%, by weight selected from the group consisting of magnesium hydroxide and magnesium oxide; whereby when an anti-inflammatory effective amount of said compound in said vehicle is topically applied to inflamed areas of the human body to alleviate the symptoms of said inflammation , said vehicle will provide a moist and occlusive covering thereof.

4,284,631
7-SUBSTITUTED CEPHEM COMPOUNDS AND PHARMACEUTICAL ANTIBACTERIAL COMPOSITIONS CONTAINING THEM

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka; Toshiyuki Chiba, Osaka, and Kiyoshi Tsuji, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

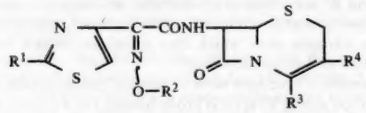
Filed Jul. 23, 1979, Ser. No. 59,893

Claims priority, application United Kingdom, Jul. 31, 1978, 31694/78

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/59, 501/16*

U.S. Cl. 424—246 **27 Claims**

1. A compound of the formula:



wherein

R^1 is amino or protected amino,

R^2 is lower alkyl of from one to six carbon atoms substituted with a substituent selected from the group consisting of cyano, carbamoyl, hydroxy, protected hydroxy, amino, protected amino, lower alkoxy, lower alkythio, lower alkenylthio, and heterocyclic selected from the group consisting of furyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, picolyl, pyrimidinyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl, isothiazolyl, and thiadiazolyl, or substituted heterocyclic with at least one lower alkyl, hydroxy or amino substituent,

R^3 is carboxy or protected carboxy, and

R^4 is hydrogen or halogen, and its pharmaceutically acceptable salt.

27. A pharmaceutical antibacterial composition comprising an effective amount of a compound of claim **1** in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,284,632
3-PYRROLIN-2-ONE DERIVATIVES AND COMPOSITIONS

Gerhard Satzinger, Denzlingen; Manfred F. Herrmann, St. Peter, and Gustav Hechtfischer, Freiburg, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

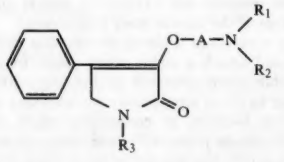
Division of Ser. No. 922,018, Jul. 5, 1978, Pat. No. 4,205,078, which is a continuation of Ser. No. 821,259, Aug. 3, 1977, abandoned. This application Sep. 14, 1979, Ser. No. 75,479

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636723

Int. Cl.[3] **A61K** *31/535, 31/54;* **C07D** *413/12, 417/12*

U.S. Cl. 424—246 **8 Claims**

1. A compound of the formula:



wherein R_1 and R_2 together with the nitrogen atom to which they are attached form a saturated 5-, 6- or 7-membered heterocyclic ring which can also contain a further nitrogen atom or an oxygen or sulphur atom, A is a straight-chain or branched hydrocarbon chain containing 2 to 4 carbon atoms and R_3 is a saturated or unsaturated, straight-chain or branched aliphatic hydrocarbon radical containing up to 6 carbon atoms or is the radical —Alk—Ar, wherein Alk is an alkylene chain containing up to 3 carbon atoms and Ar is a phenyl or heteroaryl radical optionally substituted by halogen atoms and/or lower alkoxy radicals; and the pharmacologically compatible salts thereof.

8. A pharmaceutical composition comprising an antihypertensive effective amount of at least one compound according to claim **1**, in admixture with a solid or liquid pharmaceutical diluent or carrier.

4,284,633
DERIVATIVES OF XANTHINE

Walter-Gunar Friebe, Darmstadt; Max Thiel, Mannheim; Wolfgang Kampe, Heddesheim; Otto-Henning Wilhelms, Weinheim-Rittenweier, and Androniki Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

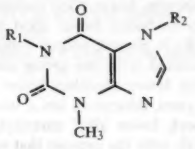
Filed May 12, 1980, Ser. No. 148,870

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922159

Int. Cl.[3] **C07D** *473/06*

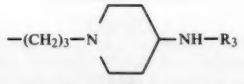
U.S. Cl. 424—253 **9 Claims**

1. A xanthine derivative of the formula



in which

one of R_1 and R_2 is a methyl radical and the other a radical of the formula



R_3 is a hydrogen atom or a lower alkanoyl radical containing up to 8 carbon atoms and which can be substituted by halogen, phenyl or naphthyl, an alkenoyl radical containing up to 8 carbon atoms which can be substituted by phenyl or naphthyl, a phenyl- or alkyl-sulphonyl radical, or a C_3–C_7-cycloalkylcarbonyl, furancarbonyl, thiophenecarbonyl, pyridinocarbonyl or benzoyl radical which can be substituted by halogen, hydroxyl, C_1–C_8-alkyl, lower C_1–C_8-alkoxy, C_1–C_8-alkoxycarbonyl, C_1–C_8-alkanoyloxy, carboxyl, nitro, amino, nitrilo, trifluoromethyl, carbamoyl or benzyl,

or a pharmacologically acceptable salt thereof.

4,284,634

1,4-DIHYDROPYRIDINE DERIVATIVES, AND PHARMACEUTICAL METHOD OF THE SAME

Yoshinari Satu, Takaishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

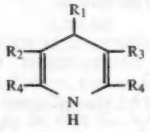
Continuation-in-part of Ser. No. 809,788, Jun. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,994, Jul. 1, 1976, Pat. No. 4,145,432. This application May 17, 1979, Ser. No. 39,752

Claims priority, application United Kingdom, Jul. 2, 1975, 27945/75; Sep. 29, 1975, 39854/75; Dec. 16, 1975, 51524/75; Apr. 5, 1976, 13761/76; Dec. 17, 1976, 52720/76; Jun. 6, 1978, 26429/78; Oct. 10, 1978, 39978/78

Int. Cl.[3] **C07D** *213/55;* **A61K** *31/455*

U.S. Cl. 424—266 **50 Claims**

1. A compound of the formula:



wherein

R_1 is unsubstituted phenyl, phenyl monosubstituted with halogen, nitro, hydroxy, halo(lower)alkyl, lower alkyl, lower alkoxy, lower alkenyloxy, cyano, lower alkoxycarbonyl or lower alkylsulfamoyl, and disubstituted phenyls selected from 2-chloro-5-nitro, 2–3 and 3–4 dichloros and 3–4 dimethoxy,

R_2 and R_3 are lower alkoxycarbonyl, halo(lower)alkoxycarbonyl, hydroxy(lower)alkoxycarbonyl, lower alkoxy(lower)alkoxycarbonyl, phenyl(lower)alkoxycarbonyl, phenyl(lower)alkoxy(lower)alkoxycarbonyl, phenoxy(lower)alkoxycarbonyl, N,N-(di)-(lower)alkylamino(lower)alkoxycarbonyl and N-lower alkyl-N-phenyl(lower)alkylamino(lower)alkoxycarbonyl,

R_4 is hydroxy(lower)alkyl or gem-di(lower)alkoxy(lower)alkyl, and

R_5 is hydrogen, lower alkyl, or the same as R_4.

4,284,635

ANALGESIC 1,2,4,5-TETRA-ALKYL-4-ARYLPIPERIDINES

Dennis M. Zimmerman, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

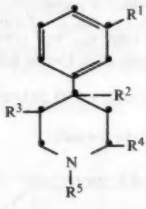
Filed Nov. 29, 1978, Ser. No. 965,137

The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.

Int. Cl.[3] **A61K** *31/445;* **C07D** *211/22, 211/14*

U.S. Cl. 424—267 **22 Claims**

1. A compound having the formula



wherein:

R^1 is hydrogen, hydroxy or methoxy;

R^2, R^3 and R^4 independently are C_1–C_5 alkyl;

R^5 is C_1–C_{10} alkyl, benzyl or CH_2R^6, in which R^6 is C_2–C_7 alkenyl or C_3–C_6 cycloalkyl; or a pharmaceutically acceptable acid addition salt thereof.

17. A method of inducing analgesia in animals comprising administering an analgesically effective dose of a compound of claim **1**.

4,284,636

CINNAMOYLPIPERIDINOBUTYROPHENONE ANTIPSYCHOTIC AGENTS

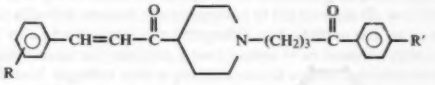
Albert A. Carr, and Robert A. Farr, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Sep. 4, 1979, Ser. No. 72,498

Int. Cl.[3] **C07D** *211/70, 405/06;* **A61K** *31/445*

U.S. Cl. 424—267 **11 Claims**

1. A compound of the formula



wherein R is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, fluorine, chlorine, bromine, or trifluoromethyl; and R′ is hydrogen, fluorine, chlorine or bromine; and pharmaceutically acceptable acid addition salts thereof.

4,284,637

PHARMACEUTICALLY ACTIVE 2-(4-AMINOBUTOXY)STILBENES

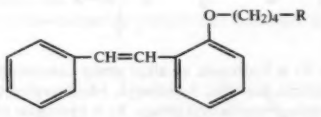
Ryoji Kikumoto, Machida; Akihiro Tobe, Kawasaki; Harukazu Fukami, Yokohama; Kunihiro Ninomiya, Yokohama, and Mitsuo Egawa, Yokohama, all of Japan, assignors to Mitsubishi Chemical Ind., Limited, Tokyo, Japan

Division of Ser. No. 11,998, Feb. 14, 1979, Pat. No. 4,217,366. This application Oct. 1, 1979, Ser. No. 80,215

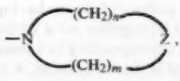
Int. Cl.[3] **A61K** *31/40, 31/445, 31/495;* **C07D** *221/00*

U.S. Cl. 424—267 **7 Claims**

1. A compound having the formula:



wherein R is



wherein Z is selected from the group consisting of —CH_2—, —CR_3H—, said R_3 being C_1–C_5 alkyl, and —CHOH—; and wherein m and n are each integers of 0 to 4 with m+n being equal to 4, or the acid addition salts thereof.

7. A method of treating convulsions and seizures or relieving skeletal muscle spasm in warm-blooded animals which comprises administering to said animals an effective amount for treatment of convulsions and seizures or relief of skeletal muscle spasm of a compound of claim **1** or the acid addition salt thereof.

4,284,638

PHARMACEUTICAL COMPOSITIONS WITH CENTRAL DEPRESSANT AND ANTIPSYCHOTIC ACTIVITY WHICH CONTAIN AS ACTIVE INGREDIENTS A BUTYROPHENONE DERIVATIVE WHICH IS BASICALLY SUBSTITUTED IN THE 4-POSITION AND A C-(2-BENZOFURANYL)-PIPERIDINE OR C-(2-BENZOFURANYL)-TETRAHYDRO-PYRIDINE

Peter Waldmeier, Reinach, and Aleksandra Delini-Stula, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

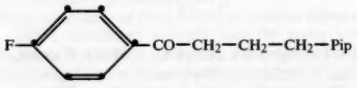
Filed Nov. 14, 1979, Ser. No. 93,970

Claims priority, application Switzerland, Nov. 21, 1978, 11918/18

Int. Cl.[3] **A61K** *31/445*

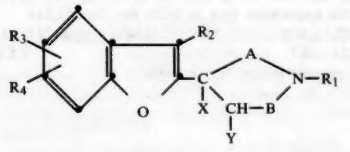
U.S. Cl. 424—267 **10 Claims**

1. A pharmaceutical composition with central depressant and antipsychotic activity which contains, as first active ingredient, a butyrophenone derivative of the formula I



(I),

in which Pip is a piperidino radical which is substituted in the 4-position by hydroxyl and a radical selected from halophenyl, trifluoromethylphenyl and lower alkylphenyl, or a pharmaceutically acceptable acid addition salt thereof, and as second active ingredient, an unsubstituted or substituted C-(2-benzofuranyl)-piperidine or C-(2-benzofuranyl)-tetrahydropyridine of the formula II



(II)

wherein R_1 is hydrogen, an alkyl group containing at most 4 carbon atoms, the allyl, 3-oxobutyl, 3-hydroxybutyl, 2-propynyl or cyclopropylmethyl group, R_2 is hydrogen or a methyl group, R_3 is hydrogen, halogen having an atomic number up to 35, a lower alkyl or alkoxy group, the trifluoromethyl group or a cycloalkyl group containing 5 to 8 carbon atoms, R_4 is hydrogen, a lower alkyl group or halogen having an atomic number up to 35, or R_3 and R_4 together are a 1,3-butadienylene radical in the 4,5-position, corresponding to a fused benzene ring, or a trimethylene radical in the 5,6-position, A is the ethylene group and B is the methylene group, or A is the methylene group and B is the ethylene group, and each of X and Y is hydrogen or together are an additional bond, or a pharmaceutically acceptable acid addition salt thereof, the ratio of the first and second active ingredient being from 1:2 to 1:100, together with at least one conventional carrier or adjunct.

4. A pharmaceutical composition according to claim **1** which contains haloperidol or a pharmaceutically acceptable acid addition salt thereof, and 4-(5,6-dimethyl-2-benzofuranyl)-piperidine or a pharmaceutically acceptable acid addition salt thereof.

4,284,639

COMBATING FUNGI WITH 1-PHENOXY-2-(2,4-DICHLOROPHENYL)-1-(1,2,4-TRIAZOL-1-YL)-ETHAN-2-ONES AND -OLS

Wolfgang Krämer; Karl H. Büchel, both of Wuppertal; Wilhelm Brandes, Leichlingen; Paul-Ernst Frohberger, Leverkusen, and Manfred Plempel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

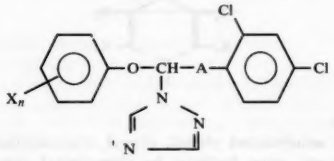
Continuation of Ser. No. 28,620, Apr. 9, 1979, abandoned, which is a continuation of Ser. No. 872,988, Jan. 27, 1978, abandoned. This application Feb. 28, 1980, Ser. No. 125,724

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705678; Feb. 11, 1977, 2705679

Int. Cl.[3] **A01N** *43/64;* **C07D** *249/08;* **A61K** *31/41*

U.S. Cl. 424—269 **11 Claims**

1. A 1-phenoxy-1-(2,4-dichlorophenyl)-1-(1,2,4-triazol-1-yl)-ethan-2-one or -ol of the formula



in which

A is —C(O)— or —CH(OH)—,

X each independently is halogen, alkyl with 1 to 4 carbon atoms, phenyl or halogen substituted phenyl, and

n is 0, 1, 2 or 3,

or a salt thereof.

8. A fungicidal or antimicrobial composition containing as active ingredient a fungicidally or antimicrobially effective amount of a compound or salt according to claim **1** in admixture with a diluent.

9. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound or salt according to claim **1**.

11. A method of treating a patient suffering from microbial infection which comprises administering to such patient an antimicrobially effective amount of a compound or salt according to claim **1**.

4,284,640

ETHYLENE DERIVATIVES

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote; Charon R. Ganellin, Welwyn Garden City, and Hunter D. Prain, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

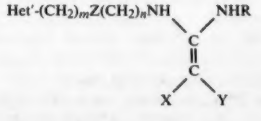
Division of Ser. No. 930,102, Aug. 1, 1978, Pat. No. 4,220,652, which is a division of Ser. No. 797,160, May 16, 1977, Pat. No. 4,124,717, which is a division of Ser. No. 629,174, Nov. 5, 1975, Pat. No. 4,046,907, which is a continuation-in-part of Ser. No. 468,617, May 9, 1974, Pat. No. 3,953,460. This application Feb. 4, 1980, Ser. No. 117,903

Claims priority, application United Kingdom, May 17, 1973, 23568/73

Int. Cl.[3] **A01N** *43/82;* **C07D** *285/08, 285/10, 285/12*

U.S. Cl. 424—270 **6 Claims**

1. A compound of the formula:



wherein X and Y, which may be the same or different, are hydrogen, nitro, cyano or SO_2Ar but are not both hydrogen; Het' is thiadiazolyl unsubstituted or substituted by amino; R is hydrogen, lower alkyl or Het-$(CH_2)_m$Z$(CH_2)_n$; Z is sulphur or methylene; m is 0, 1 or 2 and n is 2 or 3 provided that the sum of m and n is 3 or 4; Het is an oxazolyl, isoxazolyl or triazolyl ring unsubstituted or substituted by lower alkyl, hydroxyl, halogen or amino or a thiadiazolyl ring unsubstituted or substituted by amino, said Het' and Het being attached at a ring carbon; and Ar is phenyl unsubstituted or substituted by halogen or methyl or a pharmaceutically acceptable acid addition salt thereof.

6. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in need thereof in an effective amount to inhibit said receptors a compound of claim 1.

4,284,641
PHARMACEUTICALLY ACTIVE IMIDAZOLE DERIVATIVES

Peter B. Thorogood, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

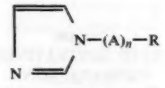
Filed Aug. 24, 1978, Ser. No. 936,406

Claims priority, application United Kingdom, Aug. 26, 1977, 35912/77; Aug. 26, 1977, 35913/77; Feb. 1, 1978, 3983/78; Feb. 1, 1978, 3984/78; Aug. 8, 1978, 32526/78; Aug. 8, 1978, 32536/78; Aug. 22, 1978, 34106/78

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 R **76 Claims**

1. A method for the treatment or prophylaxis of a thrombo-embolic disorder of a mammal or a mammalian tissue comprising the administration to the mammal or mammalian tissue of a non-toxic, anti-thrombo-embolic amount of an imidazole of the formula



in which A is a straight or branched, saturated or unsaturated acyclic hydrocarbon radical of from 1 to 3 carbon atoms, n is 0 or 1, and R is a cycloalkyl or cycloalkenyl radical of from 4 to 9 carbon atoms and optionally substituted by one two, three or more alkyl radicals each containing from 1 to 4 carbon atoms, or, when n is 1, A and R together form an alkyl radical of from 4 to 7 carbon atoms or an alkenyl or alkynyl radical of from 4 to 9 carbon atoms, the imidazole being the free base or a pharmaceutically acceptable salt thereof.

4,284,642
1,3-DIARYL-2-IMINO-IMIDAZOLIDINES AND COMPOSITIONS THEREOF

Lajos Toldy; Zoltán Zubovics; Mariann Kürti, and Inge Schäfer, all of Budapest, Hungary, assignors to Egyt Gyógyszervegyészeti Gyar, Budapest, Hungary

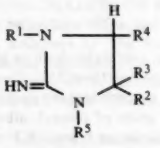
Filed Apr. 16, 1979, Ser. No. 30,149

Claims priority, application Hungary, Apr. 21, 1978, GO 1400

Int. Cl.[3] **C07D** *233/46;* **A61K** *31/415*

U.S. Cl. 424—273 R **6 Claims**

1. A compound of the formula (I),



(I)

wherein

R^1 and R^5 each represent a phenyl group optionally substituted with 1 to 3 carbon lower alkoxy, halo, lower alkyl, monohalo- lower -alkyl, dihalo- lower -alkyl and/or trihalo- lower -alkyl groups,

R^2 stands for hydrogen, formyl, carboxy, lower alkoxycarbonyl, hydroxy-alkoxycarbonyl, unsubstituted lower alkyl, or a lower alkyl group substituted with hydroxy, 1 to 3 halogen atoms, lower alkoxy, lower alkanoyloxy, cyano, an amino group or a group of the general formula —CO—Y, wherein

Y stands for hydroxy, amino, lower alkoxy or hydroxy-lower -alkoxy group,

R^3 and R^4 each represent hydrogen atoms or a lower alkyl group, with the provision that when R^1 and R^5 each represent a phenyl group, R^2 and R^3 may not stand for hydrogen; or a pharmaceutically acceptable acid additon salt, an inorganic meta salt complex, a pure isomer or a isomeric mixture thereof.

4. A pharmaceutical composition containing an antiphlogistic effective amount of a compound of the formula (I), in claim 1, or a pharmaceutically acceptable acid addition salt, an inorganic metal salt complex, a pure isomer or an isomeric mixture thereof, together with a pharmaceutical carrier, additive and/or auxiliary agent.

4,284,643
COMBATING ARTHROPODS WITH NOVEL FLUORINE-CONTAINING PHENYLACETIC ACID ESTERS

Rainer Fuchs, Wuppertal; Erich Klauke, Odenthal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath; Wilhelm Stendel, Wuppertal; Reinhard Lantzsch, and Albrecht Marhold, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

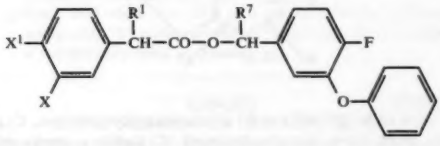
Filed Aug. 6, 1979, Ser. No. 64,253

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837524; Oct. 14, 1978, 2844816

Int. Cl.[3] **A01N** *43/30;* **C07C** *69/612, 121/75*

U.S. Cl. 424—282 **12 Claims**

1. A fluorine-containing phenylacetic acid ester of the formula



in which

R^1 represents C_{2-4}-alkyl, C_{2-4}-alkenyl or cyclopropyl,

R^7 represents hydrogen, cyano or ethynyl,

X represents H, halogen, alkyl, alkoxy, $OCHF_2$, $SCHF_2$, $SCCIF_2$ or SCF_3 and

X^1 represents halogenoalkoxy or halogenoalkylthio or together with X, represents fluorine-substituted methylenedioxy or ethylenedioxy, or, in the case where R^1 represents cyclopropyl, represents hydrogen, halogen, alkyl, halogenoalkyl, alkoxy or alkylthio or, together with X, represents methylenedioxy which is optionally F substituted.

4,284,644
SPIROBENZOFURANONE COMPOUNDS

Hirosada Sugihara, Osaka; Masazumi Watanabe, Kawanishi; Mitsuru Kawada, Amagasaki, and Isuke Imada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

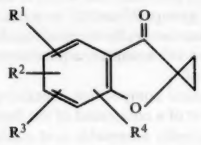
Continuation-in-part of Ser. No. 968,520, Dec. 11, 1978, abandoned. This application Jan. 25, 1980, Ser. No. 115,548

Claims priority, application Japan, Dec. 27, 1977, 52-159177; Jun. 19, 1978, 53-74700; Nov. 6, 1978, 53-136967; May 4, 1979, 54-55082; Jun. 25, 1979, 54-80551

Int. Cl.[3] **A61K** *31/34*

U.S. Cl. 424—285 **30 Claims**

1. A compound of the formula

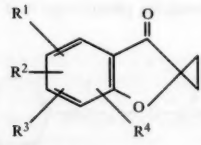


wherein

each of R^1, R^2, R^3 and R^4 is independently hydrogen, C_{1-6} alkyl, nitro, halogen, hydroxyl, C_{1-6} alkoxy, mono- or di-C_{1-4} alkylamino-C_{1-6} alkoxy, phenyl-C_{1-4} alkyloxy, C_{2-6} alkanoyloxy, benzoyloxy, C_{2-6} alkanoyl, benzoyl, sulfamoyl, carboxyl, C_{2-6} alkoxycarbonyl, carbamoyl, C_{1-4} alkylcarbamoyl, di-C_{1-4} alkylamino-C_{1-4} alkylcarbamoyl, N-C_{1-4} alkylpyrrolidinyl-C_{1-4} alkylcarbamoyl, ureido, C_{1-4} alkylureido, thioureido, C_{1-4} alkylthioureido, C_{1-4} alkylthio, C_{1-4} alkylsulfinyl, C_{1-4} alkylsulfonyl, aminomethyl, mono- or di-C_{1-4} alkylaminomethyl, cyano, phenyl, amino, mono- or bis-(β-hydroxyethyl)amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, C_{2-4} alkanoylamino, C_{1-4} alkanesulfonylamino, 1-pyrrolidinyl, piperidino, a 1-piperazinyl group, or morpholino, said 1-piperazinyl group being unsubstituted or substituted at the nitrogen atom of its 4-position by C_{1-4} alkyl, phenyl-C_{1-4} alkyl or C_{2-4} alkanoyl, or

two of R^1, R^2, R^3 and R^4 together form —CH=CH—CH=CH— at adjacent carbon atoms of the benzene ring.

17. A method of managing peptic ulcer in a patient which comprises administering to said patient a compound of the formula



wherein

each of R^1, R^2, R^3 and R^4 is independently hydrogen, C_{1-6} alkyl, nitro, halogen, hydroxyl, C_{1-6} alkoxy, mono- or di-C_{1-4} alkylamino-C_{1-6} alkoxy, phenyl-C_{1-4} alkyloxy, C_{2-6} alkanoyloxy, benzoyloxy, C_{2-6} alkanoyl, benzoyl, sulfamoyl, carboxyl, C_{2-6} alkoxycarbonyl, carbamoyl, C_{1-4} alkylcarbamoyl, di-C_{1-4} alkylamino-C_{1-4} alkylcarbamoyl, N-C_{1-4} alkylpyrrolidinyl-C_{1-4} alkylcarbamoyl, ureido, C_{1-4} alkylureido, thioureido, C_{1-4} alkylthioureido, C_{1-4} alkylthio, C_{1-4} alkylsulfinyl, C_{1-4} alkylsulfonyl, aminomethyl, mono- or di-C_{1-4} alkylaminomethyl, cyano, phenyl, amino, mono- or bis-(β-hydroxyethyl)amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, C_{2-4} alkanoylamino, C_{1-4} alkanesulfonylamino, 1-pyrrolidinyl, piperidino, a 1-piperazinyl group, or morpholino, said 1-piperazinyl group being unsubstituted or substituted at the nitrogen atoms of its 4-position by C_{1-4} alkyl, phenyl-C_{1-4} alkyl or C_{2-4} alkanoyl, or

two of R^1, R^2, R^3 and R^4 together form —CH=CH—CH=CH— at adjacent carbon atoms of the benzene ring.

said compound being administered in an amount effective to manage peptic ulcer in said patient.

4,284,645
3-CHLOROSTYRYL-2,2-DIMETHYL-CYCLOPROPANECARBOXYLIC ACID 4-FLUORO-3-PHENOXY-α-CYANO-BENZYL ESTERS AND THEIR USE AS ECTOPARASITICIDES

Rainer Fuchs, and Wilhelm Stendel, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

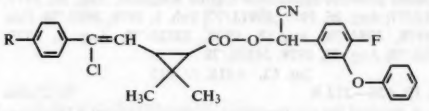
Filed Sep. 20, 1979, Ser. No. 77,502

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844271

Int. Cl.[3] **A01N** *53/00;* **C07C** *121/75*

U.S. Cl. 424—304 **8 Claims**

1. A 3-chlorostyryl-2,2-dimethyl-cyclopropanecarboxylic acid ester of the formula



(I)

in which R represents hydrogen or fluorine.

4. A method of freeing or protecting domesticated animals from ectoparasitical pests, which comprises externally applying to said animals an ectoparasiticidal amount of a compound according to claim **1** in admixture with a diluent or carrier.

4,284,646
PROSTANOIC ACID DERIVATIVES AND THEIR PREPARATION

Helmut Vorbrüggen; Norbert Schwarz; Olaf Loge, and Walter Elger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

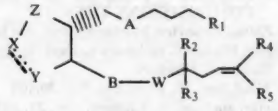
Continuation of Ser. No. 932,823, Aug. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 821,130, Aug. 2, 1977, abandoned. This application Aug. 24, 1979, Ser. No. 69,193

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635985

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 424—305 **11 Claims**

1. A compound of the formula



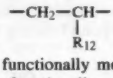
wherein R_1 is

wherein R_6 is hydroxy, a straight-chain or branched alkoxy of 1–10 carbon atoms; aryloxy; O—CH_2—U—V wherein U is a direct bond, carbonyl or carbonyloxy and V is a phenyl ring substituted by one or more of phenyl, alkoxy of 1–2 carbon atoms, or halogen A is cis- or trans-—CH=CH—; B is trans—CH=CH— or —C≡C—; W is free or functionally modi-

fied hydroxymethylene, a free or functionally modified carbonyl, or

wherein R_{11} is alkyl of 1–5 carbon atoms and the OH-group can be in the α- or β-position and can be functionally modified; Z is carbonyl or hydroxymethylene, either of which can be free or functionally modified, X...Y is either

when Z is a free or functionally modified hydroxymethylene group, or is



, when Z is a free or functionally modified carbonyl group, wherein R_{12} is a free or functionally modified hydroxy; R_2 is a hydrogen atom or alkyl; R_3 is a hydrogen atom or alkyl; R_4 and R_5 each are methyl or one of R_4 and R_5 is a chlorine atom and the other is methyl; and, when R_6 is hydroxy, the physiologically acceptable salts thereof with bases; wherein "functionally modified" OH refers to OH etherified by tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl or tri-p-benzylsilyl or esterified by the acyl group of a C_{1-15} organic carboxylic or sulfonic acid; and "functionally modified" carbonyl refers to carbonyl converted to a cyclic ketal with ethylene glycol, 1,3-propanediol, 2,2-demethyl-1,3-propanediol, 1,2-cyclopentanediol, or glycerol.

4,284,647

PROCESS FOR WASTE NITROGEN REMOVAL

Saul W. Brusilow, Baltimore; Mark L. Batshaw, Pikesville, both of Md., and Norman S. Radin, Ann Arbor, Mich., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 31, 1980, Ser. No. 135,685
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 **9 Claims**

1. A process for controlling waste nitrogen accumulation diseases in humans, caused by an impairment in the normal synthesis of urea from ordinary waste nitrogen in the body or in the normal excretion thereof, said process comprising administering an effective amount of at least one compound selected from the group consisting of benzoic acid, phenylacetic acid and the non-toxic, pharmaceutically-acceptable salts of said acids to a human suffering from such waste nitrogen accumulation disease, the amount of said compound used being sufficient to react with the waste nitrogen to form an amino acid acylation product for urinary discharge of said product.

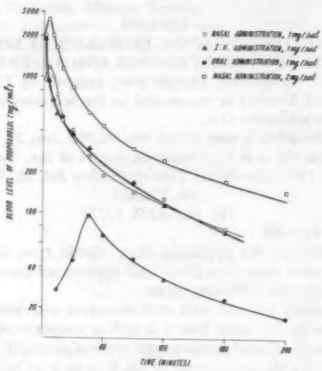
4,284,648

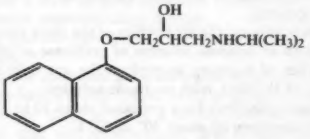
NASAL ADMINISTRATION OF PROPRANOLOL

Anwar A. Hussain; Shinichiro Hirai, and Rima Bawarshi, all of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Aug. 3, 1979, Ser. No. 63,176
Int. Cl.³ A61K *31/135, 9/00*
U.S. Cl. 424—330 **7 Claims**

1. A method for eliciting a β-andrenergic blocking response in a warm-blooded animal in need of such therapy, comprising nasally administering to said animal a therapeutically effective amount of a compound having the formula:





or nontoxic pharmaceutically acceptable derivative thereof.

4,284,649

THICKENED GELATINOUS EDIBLE ALCOHOLIC MEDICATED CARRIER

Sol B. Wiczer, 1000 Vermont Ave., Washington, D.C. 20005

Filed Nov. 22, 1977, Ser. No. 853,865
Int. Cl.² A61K *31/44, 31/60, 31/135, 47/00*
U.S. Cl. 424—362 **9 Claims**

1. In an oral medicating product having an alcohol containing base containing orally ingestible medicating substances compatibly ingestible in the said alcohol containing base, the improvement comprising

a taste imparting beverage alcohol having an alcoholic proof strength in the range of about 25–120 as said alcoholic base,

medicating substances homogeneously distributed in said beverage alcohol base in concentration to provide a medicating effect in small unit dosage quantities of said medicating product, said product being

gelated with about 3 to 10% of a methyl cellulose gelating agent added by mixing at ambient temperatures to provide a substantially solid medicating gel.

4,284,650

COMPOSITION FOR CHEWING GUMS

Jean-Jacques Goupil, 30 Avenue du President Wilson, 94230 Cachan, France

Continuation of Ser. No. 893,783, Apr. 5, 1978. This application Sep. 13, 1979, Ser. No. 75,090
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 **5 Claims**

1. A chewing gum composition in the form of a tablet, said tablet consisting essentially of an aromatized alkaline earth-free gum base, sodium fluoride, and a water soluble artificial sweetener consisting essentially of xylitol mixed with L-sorbose of the formula $C_6H_{12}O_6$, said artificial sweetener comprising between about 45% and about 90% by weight of the composition, and the weight ratio of said xylitol to said sorbose is between about 1:10 and about 10:1 and said composition being

free of alkaline earth constituents capable of forming insoluble fluoride compounds.

4,284,651

METHOD OF PREPARING CITRUS FRUIT SECTIONS WITH FRESH FRUIT FLAVOR AND APPEARANCE

Joseph H. Bruemmer, Tampa, Fla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 50,895, Jun. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 944,679, Sep. 22, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,627

Int. Cl.[3] A23L *1/212*

U.S. Cl. 426—50 **3 Claims**

1. A method for preparing thick albedo type citrus fruit sections with fresh fruit flavor and appearance comprising in combination the following steps:

(a) washing the fruit with mild detergent and rinsing;

(b) heating the citrus fruit to a surface temperature of about 40° to 60° C. and a core temperature of about 20° to 40° C.;

(c) scoring the peel surface of the fruit so as to barely penetrate the albedo or white layer, but not to penetrate the juice sections;

(d) vacuum infusing the air bubbles of the thick albedo of the fruit with an aqueous solution of pectinase at about 25 to 30 inches of mercury to replace the gas bubbles in the albedo of the fruit with pectinase solution;

(e) incubating the fruit for a period of about 10 to 60 minutes at a temperature of about 30° to 60° C.;

(f) removing the peel and other membrane of the fruit;

(g) separating each juice section intact from the segment membranes;

(h) storing the fruit under refrigeration.

4,284,652

MATRIX, PRODUCT THEREWITH, AND PROCESS

Edwin H. Christensen, Western Springs, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 761,956, Jan. 24, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,401

Int. Cl.[3] A23L *1/30*

U.S. Cl. 426—72 **41 Claims**

1. A soft dry pet food consisting of about 10 to about 50 percent of a non-adhesive, non-functional animal or vegetable protein source by weight of the pet food, a sufficient amount of vitamins and minerals to form a nutritious pet food, and 50 percent to 90 percent of a matrix by weight of the pet food wherein the matrix consists of:

(a) about 10 to about 90 percent of at least one amylaceous ingredient by weight of the matrix wherein at least ½ percent based on the weight of the matrix is a derivatized starch;

(b) about 5 to about 55 percent of at least one fat component by weight of the matrix;

(c) about 3 to about 50 percent of at least one polyhydric alcohol by weight of the matrix; and

(d) at least 5 percent water by weight of the matrix.

4,284,653

PROCESS FOR HANDLING AND PROCESSING FISH MEAT

Ritsuo Shigeoka, Hachioji; Eizo Nagahisa, Sagamihara, and Takafumi Yamauchi, Hachioji, all of Japan, assignors to Nippon Suisan Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1980, Ser. No. 111,007

Claims priority, application Japan, Jan. 13, 1979, 54-3165; Jan. 13, 1979, 54-3166; Dec. 18, 1979, 54-164307

Int. Cl.[3] A22C *25/00;* **A23L** *3/36*

U.S. Cl. 426—312 **8 Claims**

1. A process of treating fish meat contaminated with sporozoa which comprises adding to the fish meat effective inhibiting amounts of at least one food compatible and edible additive which inhibits thiol protease.

4,284,654

USE OF 1-HYDROXY-1-ETHYNYL-2,2,6-TRIMETHYL CYCLOHEXANE IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS

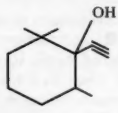
Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; John B. Hall, Rumson; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Ronald Schreck, Keyport; Edward J. Granda, Englishtown, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 88,451, Oct. 26, 1979, Pat. No. 4,250,332. This application Jun. 5, 1980, Ser. No. 156,677

Int. Cl.[3] A23L *1/226*

U.S. Cl. 426—538 **1 Claim**

1. The process for augmenting or enhancing the aroma or taste of a foodstuff comprising adding to said foodstuff from 0.02 parts per million up to about 500 parts per million based on said foodstuff of the compound having the structure:



4,284,655

LOW-FAT COMESTIBLE SPREAD SUBSTITUTES

Donald E. Miller, and Cecilia Gilmore, both of Strongsville, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Apr. 22, 1980, Ser. No. 142,802

Int. Cl.[3] A23D *5/00*

U.S. Cl. 426—602 **8 Claims**

1. A flavored comestible spread consisting essentially of an oil-in-water dispersion of

(a) water;

(b) a partial glyceride ester composition containing about 38–48% diglyceride, monoglyceride present in the ratio monoglycerides to diglycerides of about 1:5 to 1:1.5 based on the diglyceride content, and triglyceride in an amount less than the mono- and diglyceride contents combined, said partial glyceride having a Capillary Melting Point less than about 120° F.;

(c) surface active cellulosic thickener; and

(d) a flavoring proportion of flavorant;

the weight proportions of (a), (b) and (c) being about 30–100:10:0.5–2, sufficient to produce a plastic consistency and Brookfield viscosity of at least about 100,000 cps through a temperature range of about 38°–90° F.

4,284,656

NOVEL PROTEIN CURD PRODUCT AND PROCESS OF PREPARATION

Stephen C. P. Hwa, 10 Belvue Ct., Penfield, N.Y. 14526

Filed Dec. 14, 1979, Ser. No. 103,732

Int. Cl.[3] A23J *1/14, 3/00*

U.S. Cl. 426—641 **13 Claims**

1. A process for preparing a high protein, low fat foodstuff material comprising the steps of:

a. extracting protein from a defatted soy bean material with water to provide an aqueous protein extract having at least 2.0 weight percent protein,

b. separating residual defatted soy bean material from the aqueous protein extract,

c. coagulating protein from the aqueous protein extract to produce a protein curd product and a whey by adjusting the pH to within the range from about 5.4 to about 8.0 and

heating the aqueous protein extract to within a temperature range from about 80° C. to about 170° C.,

d. separating the protein curd product from the whey, and

e. washing the protein curd product with water to produce a high protein, low fat foodstuff.

4,284,657

FLUIDIZED OLEORESIN COMPOSITIONS

Norman K. Stanton, Arlington Heights, Ill., assignor to Kraf, Inc., Glenview, Ill.

Filed Jan. 9, 1980, Ser. No. 110,787
Int. Cl.³ A23L *1/221*
U.S. Cl. 426—651 **7 Claims**

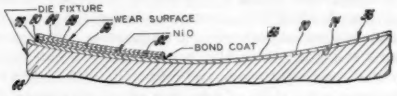
1. An aqueous based, fluidized substantially sterile oleoresin composition comprising from about 10 to about 20 percent by weight of a natural oleoresin, from about 10 to about 20 percent by weight of a surfactant selected from the group consisting of polyoxyethylene ethers of sorbitol monooleate having about 20 oxyethylene groups per molecule and mixtures thereof, from about 0.25 to about 2 percent by weight of an edible hydrophilic gum which provides aqueous thickening properties under acidic conditions, from about 0.025 to about 1 percent by weight of phosphoric acid, and at least about 60 percent by weight of water.

4,284,658

REGENERATOR SEAL

Leonard C. Davis; Theodore Pacala, and George R. Sippel, all of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1979, Ser. No. 96,924
Int. Cl.³ B05D *1/08*
U.S. Cl. 427—34 **3 Claims**



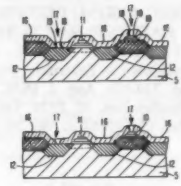
1. A method for manufacturing a seal cross arm assembly for a rotary heat exchange regenerator comprising the steps of forming a cross arm substrate member having free opposite ends thereon joined by a center segment having side edges between the opposite ends, equally stressing the member to a flattened condition, fixedly securing the substrate member to a holding fixture to maintain a concave bend between the opposite ends at the outer surface of the substrate member to maintain a controlled prestress therein during subsequent processing steps, bond coating the outer surface to form an oxidation resistant surface thereon, plasma spray coating a layer of nickel oxide on the bond coating to prevent contamination thereof by subsequently applied wear surface material, plasma spray depositing a nickel oxide/calcium flouride wear coating to a uniform depth across the plasma spray coating of nickel oxide for defining a wear surface of concave form, and thereafter heat treating the prestressed and coated substrate member to produce a thermally induced growth stress in the wear coating that substantially equalizes the prestress in the substrate member thereby to produce a resultant flat wear surface on the cross arm assembly when the substrate member is removed from the holding fixture and placed in a gas turbine engine regenerator and operated under temperature conditions in the order of 1400° F.

4,284,659

INSULATION LAYER REFLOW

Ralph J. Jaccodine, Allentown, Pa., and Ami Kestenbaum, East Windsor Township, Mercer County, N.J., assignors to Bell Telephone Laboratories, Murray Hill, N.J. and Western Electric Co., Inc., New York, N.Y.

Filed May 12, 1980, Ser. No. 148,858
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **9 Claims**



1. A method of forming an interlevel glass dielectric layer in a semiconductor device, comprising the steps of:

depositing a layer of glass dielectric material on a partially completed semiconductor device;

forming feed-through apertures in the glass dielectric material; and

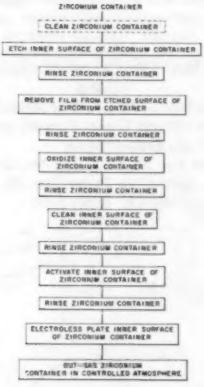
exposing the apertured glass dielectric layer to high energy laser radiation which is selectively coupled to said layer to reflow the layer to form a smooth surface topography around said apertures without substantially heating said partially completed semiconductor device.

4,284,660

ELECTROLESS DEPOSITION PROCESS FOR ZIRCONIUM AND ZIRCONIUM ALLOYS

Robert E. Donaghy, and Anna H. Sherman, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed May 11, 1978, Ser. No. 904,783
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—57 **15 Claims**


ZIRCONIUM CONTAINER
CLEAN ZIRCONIUM CONTAINER
ETCH INNER SURFACE OF ZIRCONIUM CONTAINER
RINSE ZIRCONIUM CONTAINER
REMOVE FILM FROM ETCHED SURFACE OF ZIRCONIUM CONTAINER
RINSE ZIRCONIUM CONTAINER
OXIDIZE INNER SURFACE OF ZIRCONIUM CONTAINER
RINSE ZIRCONIUM CONTAINER
CLEAN INNER SURFACE OF ZIRCONIUM CONTAINER
RINSE ZIRCONIUM CONTAINER
ACTIVATE INNER SURFACE OF ZIRCONIUM CONTAINER
RINSE ZIRCONIUM CONTAINER
ELECTROLESS PLATE INNER SURFACE OF ZIRCONIUM CONTAINER
DUT—GAS ZIRCONIUM CONTAINER IN CONTROLLED ATMOSPHERE

1. A method for producing a zirconium or a zirconium alloy container for fissionable nuclear reactor fuel, which container is resistant to stress corrosion cracking and embrittlement when subjected to fission reactions in nuclear reactor use, which method comprises the steps of:

(a) etching the inside surface of said container,

(b) desmutting the etched surface of said container to remove only loosely adhering material,

(c) oxidizing the inside surface of said container with steam to produce a zirconium oxide coating thereon,

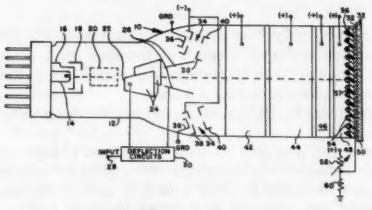
(d) cleaning the oxidized surface of said container to remove substantially all foreign matter therefrom,
(e) activating the oxidized surface of said container for electroless deposition of a metal layer thereon, and
(f) contacting the activated surface of said container with an electroless metal plating solution to deposit a metal layer thereon.

4,284,661

PROCESS FOR MAKING BISTABLE STORAGE CATHODE RAY TUBE

Duane A. Haven, Portland, and Robert L. Arneson, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 710,496, Aug. 2, 1976, Pat. No. 4,159,439.
This application Jan. 31, 1979, Ser. No. 8,293
Int. Cl.[2] H01J *31/08, 29/10*
U.S. Cl. 427—64 **4 Claims**



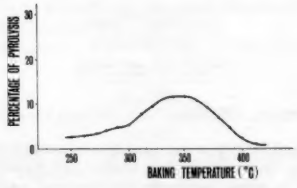
1. A method of making a storage target for use with a cathode ray tube comprising the steps of:
applying a conductive layer onto an inside surface of an insulating support member;
forming a pattern of collector electrode members on said conductive layer;
forming an insulating material at least around each of said collector electrode members except for outer exposed areas thereof; and
fixing a layer of dielectric storage material along said conductive layer and in engagement with said insulating material around said collector electrode members.

4,284,662

METHOD OF MANUFACTURING COLOR PICTURE TUBES

Osamu Matsuzaki; Michio Abe, both of Mobara; Koichi Mitobe, Mutsuzawa, and Seikichi Tanno, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,860
Claims priority, application Japan, Jan. 23, 1978, 53-5257
Int. Cl.[3] B05D *5/06*
U.S. Cl. 427—68 **7 Claims**



1. In a method of manufacturing a colour picture tube of the type comprising the steps of coating phosphors of three primary colours on the inner surface of the face plate of the colour picture tube to form dots or stripes of the phosphors; applying an acrylic resin emulsion on said dots or stripes of the phosphors to form an acrylic resin film; vapour depositing metal onto said film to form a metallic reflecting film; subjecting said acrylic resin film to a pyrolysis for decomposing it into gases; and removing the gases; the improvement wherein said acrylic resin film-forming emulsion consists essentially of a mixture of a plurality of film-forming emulsions each consisting essentially of a different acrylic resin having a different pyrolysis characteristic, wherein one of the emulsions of said mixture consists essentially of a first film-formimg acrylic polymer having a peak pyrolysis temperature lower than that of a second acrylic film-forming polymer contained in a second emulsion of said mixture and said first polymer is present in an amount of 5 to 40% by weight based on the total weight of said film-forming polymers, whereby said mixture results in an acrylic film-forming emulsion the film formed by which has a pyrolysis characteristic that is different from the pyrolysis characteristic of that formed by any of the emulsions forming said mixture.

4,284,663

FABRICATION OF OPTICAL WAVEGUIDES BY INDIFFUSION OF METALS

John R. Carruthers, Murray Hill; Ivan P. Kaminow, New Shrewsbury, and Ronald V. Schmidt, Matawan, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 684,974, May 10, 1976, abandoned, which is a continuation of Ser. No. 477,165, Jun. 6, 1974, abandoned. This application Dec. 17, 1979, Ser. No. 104,676
Int. Cl.[3] B05D *5/06*
U.S. Cl. 427—164 **7 Claims**

1. A method of fabricating a light guide along a surface of a crystal transparent to at least a portion of the optical spectrum comprising the steps of providing a path of increased index of refraction along said surface, said path forming a light guide; and providing means for coupling an optical wave into said light guide; characterized in that said step of providing a path of increased index includes the step of depositing a layer of a diffusant selected from the group consisting of elements having atomic numbers 21–30, gold and silver onto said surface of said crystal, said layer having a thickness in the range of about 200 Angstroms to about 800 Angstroms and indiffusing said diffusant by heating said crystal to a temperature in the range of about 800 degrees C. to 1100 degrees C. for a time between four hours and eight hours, said time being sufficient to effect an increase in the index of refraction of a surface layer of said crystal suitable for guiding an optical wave, said increase being of the order of one percent at said surface and which decreases by one-half at a depth of the order of one micrometer below said surface.

4,284,664

FIBER REINFORCED CERAMICS PRODUCED WITHOUT PRESSING OR SINTERING USING A SLURRY COMPRISING A SILICATE AND A POWDERED CERAMIC

Harry W. Rauch, Sr., Chester, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 5, 1979, Ser. No. 100,283
Int. Cl.[3] B05D *1/12, 3/00;* **B32B** *13/02*
U.S. Cl. 427—180 **8 Claims**

1. A ceramic composite prepared without pressing or sintering by:
applying to a reinforcing medium a slurry of an aqueous alkali silicate and a powdered ceramic; and
removing the moisture content by drying.

5. A process for preparing a composite ceramic without pressing or sintering comprising the steps of:
applying to a reinforcing medium a slurry of an aqueous alkali silicate and a powdered ceramic; and
removing the moisture content by drying.

4,284,665

PROCESS FOR COATING AN ELECTRICALLY NONCONDUCTIVE MATERIAL WITH METAL

Seppo O. Heimala, Pori, and Frans H. Tuovinen, Ulvila, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Dec. 20, 1979, Ser. No. 105,555

Claims priority, application Finland, Dec. 20, 1978, 783935

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—203 **7 Claims**

1. A process for coating an electrically nonconductive material with a metal, comprising impregnating the surface of the nonconductive material with a metal or compound thereof in pulverous form less noble than the metal used for coating the surface of the nonconductive material, by first applying a coarser powder of said less noble metal or compound having a particle size of approximately 50–500 μm and then, on the surface, applying a finer powder of said less noble metal or compound having a particle size of 1–50 μm, and finally spraying a solution of the nobler metal on the surface of the electrically nonconductive material.

4,284,666

PROCESS FOR METAL DEPOSITION OF A NON-CONDUCTOR SUBSTRATE

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 817,242, Jul. 20, 1977, Pat. No. 4,181,759, which is a continuation-in-part of Ser. No. 712,131, Aug. 5, 1976, abandoned. This application Dec. 26, 1979, Ser. No. 106,916

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.³ B05D *3/04, 3/10;* **C23C** *3/02*

U.S. Cl. 427—304 **8 Claims**

1. A process for the electroless metal deposition of a nonconductor substrate comprising the steps of:

(1) contacting said substrate with a catalytic colloidal composition prepared by

(a) admixing

1. stannous ions in a molar concentration excess to precious metal ions and in a molar concentration excess to readily hydrolyzable stannic ion, with
2. precious metal ions, and
3. a readily hydrolyzable stannic compound which upon heating results in the conversion of the stannic ions to colloidal aged tin(IV) which imparts a colloidal nature to said composition and further wherein the readily hydrolyzable stannic compound is derived from an extraneous source, and
4. an acid, and

(b) exposing said admixture to thermal energy whereby converting the stannic ions in said readily hydrolyzable stannic compound to said colloidal aged tin(IV), and in addition said colloidal composition further contains a reducing agent in an inactive state, and

(2) contacting the treated substrate with an electroless plating bath.

4,284,667

REINFORCING MEMBER FOR CASTABLE MATERIAL AND PROCESS OF MIXING REINFORCING ELEMENTS WITH SAID MATERIAL

Joris Moens, Kortrijk, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium

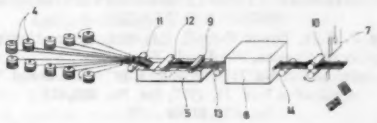
Division of Ser. No. 850,246, Nov. 10, 1977, Pat. No. 4,224,377, which is a continuation of Ser. No. 456,592, Apr. 1, 1974, abandoned. This application Jan. 18, 1980, Ser. No. 113,320

Claims priority, application United Kingdom, Apr. 16, 1973, 18322/73

Int. Cl.³ B32B *5/06, 7/00*

U.S. Cl. 427—331 **5 Claims**

1. A process for making a multiplicity of reinforcing members for a castable cementitious matrix material such as mortar or concrete, which process comprises bundling a number of steel wires of a thickness between about 0.1 mm. and 1 mm. by aligning them side by side, dipping the so formed bundle into a bath of hardenable liquid comprising a binder, affectable by a disintegration ingredient suitable to be included in the castable cementitious material, extracting the so wetted bundle from



said bath, causing the liquid adherent to said bundle to harden, and chopping said bundle transversely into pieces wherein the individual steel wire pieces have a length to thickness ratio between about 50 and 200.

4,284,668

PAINT SEALANT WITH TEFLON T.F.E

Charles R. Nixon, Redington Beach, Fla., assignor to Tough-Guard, Inc., Pinellas Park, Fla.

Filed Aug. 27, 1979, Ser. No. 69,706

Int. Cl.³ B05D *3/02, 3/12, 1/36, 7/00*

U.S. Cl. 427—355 **6 Claims**

1. A process for protecting a painted surface, which comprises:

providing a paint sealant composition in the form of a tetrafluoroethylene monomer, a tetrafluoroethylene dispersion carrier, an abrasive compound and an abrasive dispersion carrier;

buffing the paint sealant composition on the painted surface until sufficient heat is created to dissipate the dispersion carriers and to polymerize the tetrafluoroethylene monomer, so as to create a layer of a polymer over the painted surface.

4,284,669

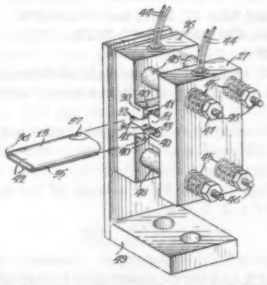
METHOD OF MAKING SOLDER COATED TUBES

James J. Carravetta, Racine, Wis., and Edward A. Robinson, Bloomington, Ill., assignors to Modine Manufacturing Company, Racine, Wis.

Division of Ser. No. 73,217, Sep. 7, 1979. This application Aug. 22, 1980, Ser. No. 180,490

Int. Cl.³ C23C *1/04;* **B05C** *11/04*

U.S. Cl. 427—357 **5 Claims**



1. The method of applying a substantially uniform coating of heated molten solder to the surface of a flat tube at and adjacent to the side edges thereof, comprising: drawing said flat tube through a bath of said molten solder; passing said coated tube between spaced heated platens comprising opposite shaping die members forming a slot embracing the opposite side edge area of said coated tube, said heated die members being at a temperature for maintaining said solder in a molten condition, said die members having means providing a gap in the

platens at at least one of the flat sides of the tubes; and means for immediately cooling said coating of solder.

4,284,670

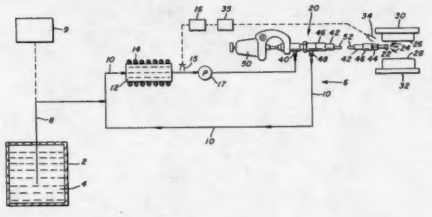
METHOD FOR APPLYING LUBRICANTS ONTO METAL WORKING SURFACES

Richard P. Kole, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 712,388, Aug. 6, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,493

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—422 **5 Claims**



1. A method of uniformly spraying an ordinarily high viscosity nonaqueous lubricant containing solid additives onto the metal working surfaces of heated dies in a forging press comprising the steps of:

heating said lubricant to approximately 170° to 300° F. to reduce its viscosity to approximately 1.0 centipoise;

continuously recirculating a constant volume of said lubricant at a pressure of approximately 30 to 70 pounds per square inch and a temperature of approximately 170° to 300° F. from the source of heat to a spray nozzle;

hydraulically atomizing said recirculating lubricant by selectively feedng said lubricant through said nozzle under said pressure; and

directing said atomized lubricant onto said metal working surfaces.

4,284,671

POLYESTER COMPOSITIONS FOR GAS AND MOISTURE BARRIER MATERIALS

Leopoldo V. Cancio; Gerald W. Miller, and Pai-Chuan Wu, all of Cincinnati, Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Filed May 11, 1979, Ser. No. 38,094

Int. Cl.³ B65D *00/00;* **B32B** *27/06*

U.S. Cl. 428—35 **13 Claims**

1. A gas and moisture barrier material fabricated into a structural layer comprising a polymer blend which consists essentially of

(a) a polymer selected from the group of a polyester and copolymers thereof, and

(b) poly(ethylene/vinyl alcohol).

13. A container formed from a layer of barrier material defined in claims **1**, **2**, **3**, **4**, **6** or **7**.

4,284,672

FLEXIBLE PACKAGING COMPOSITE COMPRISING AN OUTER POLYAMIDE LAYER, AN INTERMEDIATE METAL FOIL LAYER AND AN INTERIOR HEAT-SEALABLE LAYER

Nathan Stillman, Walnut Creek, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 18, 1979, Ser. No. 104,799

Int. Cl.³ B32B *1/02, 15/08;* **B65D** *37/00*

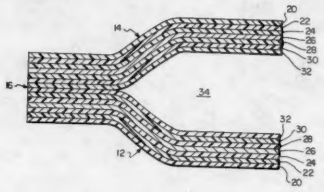
U.S. Cl. 428—35 **8 Claims**

1. A composite, flexible packaging film consisting essentially of

an outer layer of balanced biaxially oriented thermoplastic polymer;

a middle layer of flexible metal foil affixed to one surface of said outer layer;

an inner layer of a heat-sealable ethylene copolymer or rubber-modified high-density polyethylene affixed to a surface of said middle layer opposite said outer layer; and



a first adhesive layer between said middle and inner layers.

8. A composite, flexible packaging film according to claim **1**, which is formed into two sheets; said sheets oriented one on top of another with their inner layers facing each other; said sheets heat sealed at their edges to form a flexible pouch.

4,284,673

METHOD OF MANUFACTURING A PANEL, PROVIDED WITH A FRAME FOAMED OF SYNTHETIC MATERIAL AT LEAST AT ONE LATERAL FACE THEREOF, AS WELL AS A PANEL OBTAINED THROUGH THE METHOD

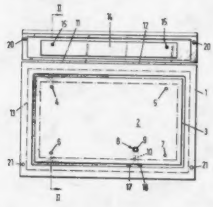
Egbert Ockels, Veendam, Netherlands, assignor to Markomark B.V., Netherlands

Filed Jun. 6, 1979, Ser. No. 46,074

Claims priority, application Netherlands, Jun. 9, 1978, 7806307

Int. Cl.³ B29D *27/00*

U.S. Cl. 428—54 **9 Claims**



1. A method of manufacturing a panel, having a porous particle board core and a frame of foamed synthetic material molded in a cavity formed along at least one side edge of said core, comprising the steps of:

(a) providing first and second communicating channels in said core, said first channel having a depth less than the panel thickness and said second channel connecting said first channel with said at least one side edge of said core;

(b) coating said second channel with a gas-impermeable material;

(c) providing at least one vent in said core, said vent having a depth less than the panel thickness, through which ambient air in said cavity can leave said cavity during molding, migrating first through said porous core itself;

(d) placing said particle board core into a mold, said cavity being defined along at least that part of the circumference of said core corresponding to said at least one side edge, for forming said frame;

(e) closing and sealing a cover over said cavity, without sealing said first channel and said at least one vent;

(f) filling said cavity with a curable bi-component foamable

synthetic material through said first and second channels, at low pressure, the formation of bubbles being substantially prevented by said gas impermeable coating, said material foaming through an exothermic reaction, said exothermic reaction sufficiently increasing the pressure and temperature of said foaming material to force said ambient air out of said cavity towards said at least one vent and to force said material to penetrate the interstices of the adjacent sections of said core prior to curing; and, after curing,

(g) removing said panel from said mold, said frame material having so penetrated said porous particle board core that said frame is integral therewith and not easily separated therefrom.

9. A panel provided with a frame obtained through application of the method according to claim **1**.

4,284,674

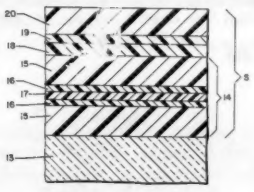
THERMAL INSULATION

Nicholas Sheptak, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 8, 1979, Ser. No. 92,624

Int. Cl.[3] **B32B** *1/04, 3/02, 27/34, 27/32*

U.S. Cl. 428—69 **18 Claims**



1. A multi-ply laminate comprising:

(1) a multi-layer coextruded film consisting essentially of (a) a core layer of ethylene vinyl alcohol adhered on each side to (b) a polyamide layer, each such polyamide layer being adhered to (c) a layer of a modified polyolefin which consists of a polyolefin polymer or copolymer blended with polyethylene grafted with an unsaturated fused ring carboxylic acid anhydride;

(2) a layer of primer material effective to enhance adhesion between said modified polyolefin layer; and

(3) an adjacent outer layer of a plastic material capable of conveying toughness and moisture barrier properties to said laminate.

7. A multi-ply laminate comprising:

(1) a five-layer coextruded cast film of about 1.5 to 5 mils in thickness consisting essentially of a core layer of ethylene-vinyl alcohol comprising about 10% of the film thickness adhered on each side to nylon comprising about 5% of the film thickness, each nylon layer being adhered to a layer of modified polyolefin comprising ethylene vinyl acetate blended with high density polyethylene grafted with an unsaturated fused ring carboxylic acid anhydride, each of said modified polyolefin layers comprising about 40% of the film thickness;

(2) a layer of about 0.5 to 2.0 mils of low density polyethylene adhered to one side of one of said modified polyolefin layers;

(3) a layer of about 0.01 to 0.10 mils of a polyester-polyurethane primer adhered to said polyethylene layer; and

(4) an outwardly facing layer of oriented polypropylene adhered to said primer layer.

9. In a thermal insulating unit comprising a porous mass of thermally insulative material and a sealed pouch hermetically enclosing said porous mass; the improvement which comprises providing a heat sealed, puncture resistant insulating unit having vapor and gas barrier properties wherein the pouch is formed of a multi-ply laminate of claim **1**.

4,284,675

CARRIERS FOR CATALYSTS

Toshiyuki Sakai, Funabashi; Koichi Matsuo, Tachikawa, and Shozo Naito, Hino, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 869,184, Jan. 12, 1978, abandoned. This application May 30, 1980, Ser. No. 155,034

Claims priority, application Japan, Jan. 26, 1977, 52/6754; Jul. 8, 1977, 52/81608

Int. Cl.[3] **B32B** *3/12*

U.S. Cl. 428—116 **9 Claims**

1. A catalyst carrier comprising a ceramic substrate, an active alumina coating formed thereon and at least one sinter inhibitor contained in the active alumina coating in which:

(1) the amount by weight of the active alumina coating is in the range of 10–25% by weight of the ceramic substrate,

(2) the water absorption of the active alumina-coated ceramic substrate is at least 12% by weight thereof, and

(3) at least one sinter inhibitor of 0.1–2.0% by weight calculated as metal and based on the coated ceramic substrate, selected from the group consisting of Mg, Al, and Th and compounds thereof, is dispersed in the active alumina coating.

4,284,676

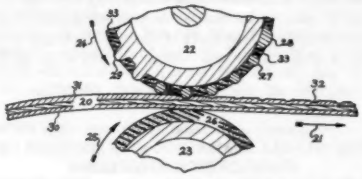
METHOD AND APPARATUS FOR FLATTENING WOOD BASED PANELS

Roland Etzold, 233 Lassen Ave., Mountain View, Calif. 94043

Division of Ser. No. 726,901, Sep. 27, 1976, Pat. No. 4,139,407. This application Feb. 8, 1979, Ser. No. 10,237

Int. Cl.[3] **B32B** *3/28*

U.S. Cl. 428—167 **2 Claims**



1. A substantially flat building panel having a front face and a backside which had been substantially curved with a concave face having substantially parallel, elongated indentations on its backside in closely spaced relationship, the panel compressed in density under the indentations and being recovered there by partial springback from greater density compression, the panel between adjacent indentations having minute, curved sections, concave on the face and perpendicular to the long axis of said indentations, said curved sections being separated from one another at said indentations by minute bends of the panel in the opposite direction to the curved sections whereby the appearance of the panel is substantially flat.

4,284,677

GLAZING UNIT

Siegfried H. Herliczek, Petersburg, Mich., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 24, 1979, Ser. No. 32,810

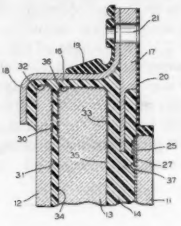
Int. Cl.[3] **B32B** *1/04;* **E04C** *1/00;* **B32B** *17/10, 15/02*

U.S. Cl. 428—192 **3 Claims**

1. In an electrically conducting laminated glazing unit including at least two sheets of glass and an interposed plastic interlayer bonded to said sheets and in which said plastic interlayer and one of said glass sheets extends beyond an edge of the other of the sheets, a bus bar along the margin of an inwardly disposed surface of one of said sheets, a transparent electrically conducting film also on said surface and in contact with said

bus bar, a first layer of polyisobutylene resin covering the area of the bus bar between said glass surface and the plastic interlayer, and a second layer of polysiobutylene resin disposed over the extended portion of said one glass sheet between the glass and the plastic interlayers, said resin layers comprising between 65 percent and 80 percent by weight of polyisobutylene with the remainder consisting essentially of carbon black and having a viscosity average molecular weight of between 8500 and 12000.

3. A laminated aircraft glazing unit including at least one sheet of glass and a layer of non-brittle thermoplastic material integrally bonded thereto over a surface of the sheet and extending outwardly beyond the glass sheet, a thickened portion on the extended part of said thermoplastic layer integrally bonded to an edge of said glass sheet, a strip of polyisobutylene resin tape between the glass sheet and the thermoplastic layer along a margin of said glass sheet adjacent said edge, and a second strip of polyisobutylene resin tape between said edge of the glass sheet and the thickened portion of the extended thermoplastic layer, said resin tapes comprising between 65 percent and 80 percent by weight of polyisobutylene with the remainder consisting essentially of carbon black and having a viscosity average molecular weight of between 8500 and 12000.



4,284,678

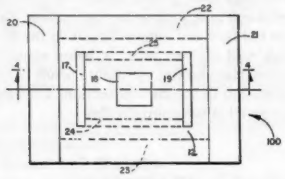
HIGH RESOLUTION MASK AND METHOD OF FABRICATION THEREOF

Addison B. Jones, La Mirada, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 943,034, Sep. 18, 1978, abandoned, which is a continuation of Ser. No. 810,469, Jun. 27, 1977, abandoned. This application Jan. 17, 1980, Ser. No. 113,006

Int. Cl.[3] **B32B** *3/00, 27/00;* **B05D** *3/06*

U.S. Cl. 428—195 **18 Claims**



1. A mask for use in fine-line lithography, comprising:

a continuous membrane which is thin enough to be substantially transparent to radiation in the form of soft x-rays or low voltage E-beams,

a patterned layer which is substantially opaque to said radiation,

said patterned layer disposed on said thin membrane, and

support means associated with said thin membrane to provide structural support at the edges of said thin membrane such that said radiation passes through the portion of said thin membrane inside said support means,

wherein said thin, continuous membrane has a thickness in the range from about 0.2 microns to about 2.0 microns.

10. The method of making a mask for use in fine-line lithography, comprising the steps of:

providing a support substrate to provide mechanical and thermal stabilization of a continuous membrane during mask fabrication,

providing a layer of a release agent on said support substrate,

forming on said layer of a release agent a continuous membrane of material which is thin enough to be substantially transparent to radiation in the form of soft x-rays or low voltage E-beams,

forming on said thin membrane a patterned layer of material which is opaque to said radiation wherein said patterned layer is supported on said membrane

affixing a support member to the edges of said thin membrane and

removing said support substrate,

wherein said thin, continuous membrane has a thickness in the range from about 0.2 to about 2.0 microns.

4,284,679

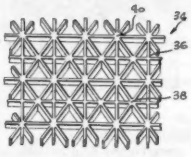
FILLED RESIN COATED TAPE

Leiv H. Blad, Van Nuys, and Charles F. Griffin, Burbank, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Nov. 6, 1978, Ser. No. 957,805

Int. Cl.[3] **B32B** *7/02*

U.S. Cl. 428—218 **10 Claims**



1. A resinous material suitable for the fabrication of laminated structures comprising:

a first layer of resin; and

at least one second uncured and substantially non-self-curing layer of filled resin contiguous with said first layer, said first layer being relatively non-compressible compared to said second layer and said second layer being readily flowable under a compressive force and adapted to be easily squeezed out of the region of the force, said flowable second layer being adapted to retain said flowability for an extended period of time until used to fabricate said laminated structures.

4,284,680

MULTI-LAYERED, NEEDLE PUNCHED, FELT-LIKE CUSHIONING MATERIAL AND PRODUCTION METHOD THEREOF

Shunya Awano, Matsudo, and Akio Shittaka, Narashino, both of Japan, assignors to Ichikawa Woolen Textile Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1980, Ser. No. 115,673

Claims priority, application Japan, Jan. 30, 1979, 54/8758

Int. Cl.[3] **B32B** *5/02*

U.S. Cl. 428—234 **5 Claims**

1. A method for producing a multi-layered, needle-punched, felt-like cushioning material having a plurality of fibrous batts and a plurality of foundation fabrics, said process comprising:

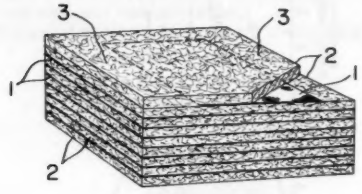
(a) feeding a fibrous batt web and a sheet of foundation fabric to a needling apparatus to needle said fabric to one face of said fibrous batt;

(b) reintroducing the leading end of the needled fabric into the needling apparatus to needle said needled fabric to said

fabric and said fibrous batt and thereby causing said needled fabric to travel in a circle;

(c) continuing to rotate said circled fabric through said needle apparatus until a circular felt of alternating layers of at least three fibrous batts and at least three foundation fabrics is obtained;

(d) superimposing a single fibrous web onto the outer surface of said circular felt and rotating said circular felt and



superimposed fabric through said needle apparatus until a predetermined number of outer layers of the same single fibrous web have been needled to said circular felt;

(e) turning said circular felt inside out and repeating step (d);

(f) heating the felt to heat-set the fibers of said batts and fabrics; and,

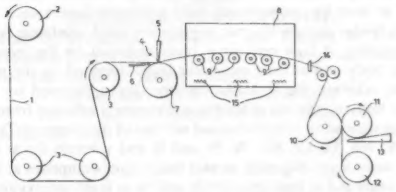
(g) severing open said circular felt to form said cushioning material.

4,284,681

COMPOSITE SHEET MATERIAL

James N. Tidmarsh, Clifton, and Gerald N. Swift, Kingswood, both of England, assignors to Dycem Limited, Bristol, England

Filed Jun. 26, 1979, Ser. No. 52,144
Int. Cl.³ B32B *27/04, 27/06, 27/08*
U.S. Cl. 428—246 **9 Claims**



9. A composite sheet material comprising bonded together in sequence:

(1) a top layer of highly-plasticised polyvinylchloride, comprising 15 to 45% by weight of polyvinylchloride and 55 to 85% by weight of a plasticiser,

wherein the plasticiser has a molecular weight in the range of about 750 to about 1250;

(2) an intermediate barrier layer between the highly-plasticised polyvinylchloride layer and the underlying backing layer,

wherein the intermediate layer consists essentially of a non-foamed polymeric material selected from polyvinylchloride containing a lower proportion of plasticiser than is contained in the highly-plasticised polyvinylchloride layer, a polyurethane, polychloroprene and a modified olefin polymer,

the intermediate layer providing a barrier to the migration of plasticiser from the highly-plasticised polyvinylchloride layer to or through the backing; and

(3) a fibrous backing.

4,284,682

HEAT SEALABLE, FLAME AND ABRASION RESISTANT COATED FABRIC

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Richard P. Tschirch, Westwood and Kenneth R. Sidman, Wayland, both of Mass.

Filed Apr. 30, 1980, Ser. No. 145,107
Int. Cl.³ B32B *7/00;* **D03D** *3/00;* **D04B** *1/00;* **D04H** *1/00*
U.S. Cl. 428—263 **10 Claims**

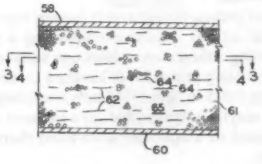
1. A flexible, abrasion resistant, flame retardant coated fabric capable of being joined by heat or dielectric sealing procedures which coated fabric comprises a fabric substrate, selected from the group consisting of the woven, knitted and bonded web fabrics of synthetic and natural fibers, bonded to a flame retardant coating of an elastomeric composition comprising about 30 to about 60 wt. percent of a soluble, thermoplastic polyurethane and from about 70 to about 40 weight percent of a flame retardant additive selected from the group consisting of decabromodiphenyloxide and antimony oxide in a weight ratio of about 3:1, respectively, and decabromodiphenyloxide, antimony oxide and ammonium polyphosphate in a weight ratio of about 3:1:3, respectively.

4,284,683

STRUCTURAL LAMINATE

Donald E. Hipchen, Seminole; Michael J. Skowronski, and Joseph R. Hagan, both of Clearwater, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 886,110, Mar. 13, 1978, abandoned, which is a continuation of Ser. No. 745,169, Nov. 26, 1976, abandoned, which is a division of Ser. No. 650,243, Jan. 19, 1976, Pat. No. 4,028,158. This application Sep. 28, 1979, Ser. No. 79,771
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.³ B32B *5/20, 5/26, 5/28*
U.S. Cl. 428—285 **15 Claims**



1. A structural laminate comprising:

A. at least one planar facing sheet;

B. a rigid foam attached to one surface of the facing sheet, the rigid foam formed from a foam-forming mixture; and

C. glass fibers wherein:

I. the glass fibers are distributed substantially evenly throughout the rigid foam,

II. the glass fibers are straight,

III. the glass fibers are greater than one foot in length,

IV. the glass fibers are arranged in layers,

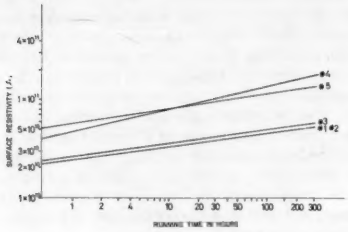
V. each layer of glass fibers is substantially parallel to the facing sheet, and

VI. the rigid foam completely fills the interstices between the glass fibers, the glass fibers being held in fixed relationship with respect to each other solely by the rigid foam.

4,284,684
MAGNETIC RECORDING MEDIUM AND METHOD OF MANUFACTURING THE SAME

Yuichi Kubota, Komoro, Japan, assignor to TDK Electronic Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,143
Claims priority, application Japan, Mar. 16, 1978, 53-29247
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—328 **11 Claims**



1. A method of manufacturing a magnetic recording medium by applying a magnetic coating material containing a magnetic powder and a binder on a base, characterized in that an antistatic additive, prepared by pulverizing and dispersing at least either nickel powder or copper powder which has the skeletal structure of a mother salt or having an aggregated structure, in the presence of a polymeric material, said pulverizing being effected by the exertion of a shearing force of a sufficient magnitude such that the skeletal structure is no longer retained or the aggregated structure is disintegrated, is mixed in said magnetic coating material.

4,284,685
ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE

Daniel R. Olson; Ona V. Orkin, both of Schenectady, and Karen K. Webb, Ballston Lake, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 10, 1980, Ser. No. 110,886
Int. Cl.³ B32B *27/30, 27/08;* **G02B** *1/08*
U.S. Cl. 428—331 **23 Claims**

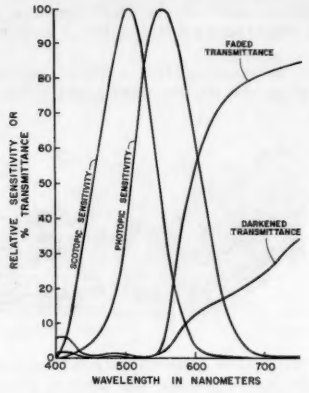
1. A coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having adhered on at least one surface thereof (i) an adhesion promoting primer layer having a controlled thickness of from about 0.015 to about 0.15 mils consisting essentially of a thermoset acrylic polymer; and (ii) a top coat on said primer layer comprised of a colloidal silica-filled thermoset organopolysiloxane.

4,284,686
SPECTACLE LENSES TO REDUCE DISCOMFORT FROM APHAKIA AND CERTAIN EYE DISFASES

Brent M. Wedding, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,250
Int. Cl.³ C03C *3/26, 3/08, 3/30*
U.S. Cl. 428—334 **17 Claims**

1. A photochromic glass article especially suitable for spectacle lenses having an integral colored surface layer and exhibiting near-zero transmittance of radiations having wavelengths shorter than a selected cutoff wavelength ranging between about 440–550 nm, said glass consisting essentially, expressed in weight percent on the oxide basis, of about 0–2.5% Li_2O, 0–9% Na_2O, 0–17% K_2O, 0–6% Cs_2O, 8–20% $Li_2O+Na_2O+K_2O+Cs_2O$, 14–23% B_2O_3, 5–25% Al_2O_3, 0–25% P_2O_5, 20–65% SiO_2, 0.004–0.02% CuO, 0.15–0.3% Ag, 0.1–0.25% Cl, and 0.1–0.2% Br, wherein the molar ratio of alkali metal oxides:B_2O_3 varies between about 0.55–0.85 and the weight ratio Ag:(Cl+Br) ranges between about 0.65–0.95.



4,284,687
COMPOUND BODY

Klaus Dreyer, Essen; Hans Grewe, Grefrath-Vinkrath; Johannes Kolaska, Bottrop, and Norbert Reiter, Mettmann, all of Fed. Rep. of Germany, assignors to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 95,099
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851584
Int. Cl.³ B32B *9/00, 15/04*
U.S. Cl. 428—336 **7 Claims**

1. A compound body used as a part subject to wear and for machining metallic materials, comprising a metallic basic body and at least two superposed hard substance layers each free from binder metals, the two superposed hard substance layers comprising at least one inner layer disposed on the metallic basic body and at least one outer layer disposed on the inner layer, wherein the at least one inner layer disposed on said basic body comprises at least one compound selected from the group consisting of carbides and nitrides of the elements Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Si, and B, and wherein the at least one outer layer disposed on said inner layer comprises at least one oxide and at least one nitride and/or at least one oxynitride of the elements Cr, Al, Ca, Mg, Th, Sc, Y, La, Ti, Zr, Hf, V, Nb, and Ta, the nitrogen content of said outer layer being about 0.1 to about 30 atom percent for each outer layer that is present.

4,284,688
MULTI-LAYER, HIGH-TEMPERATURE CORROSION PROTECTION COATING

Albin Stücheli, Zurich, and Walter Trindler, Lengnau, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

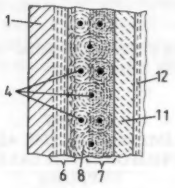
Filed Dec. 3, 1979, Ser. No. 99,708
Claims priority, application Switzerland, Dec. 21, 1978, 12995/78; Dec. 21, 1978, 12996/78
Int. Cl.³ B22F *7/04, 7/08*
U.S. Cl. 428—559 **11 Claims**

1. An article for use at high operating temperatures comprising a base material which is a metal, suitable for high temperature application, whose outer metallic surface forms a surface of the article when unprotected by a protective coating but whose outer surface is corrodible at high operating temperatures when unprotected, said metal being one into which nickel

can diffuse at high operating temperatures and a multi-layer, high-temperature corrosion protection coat upon the corrodible metallic surface which comprises:

(a) first protective layer adjacent to said metallic surface said layer having a nickel containing matrix and comprising 1–15% zirconium alone, or a mixture of zirconium and of up to 80% titanium replacing zirconium, present at least in part as fine particles disposed in said matrix, 10–30% chromium, optionally 0.05–2% yttrium, lanthanum, rare-earth and/or berylium, up to 4% silicon, up to 2% boron, and remainder essentially nickel;

(b) a second protective layer adjacent to said first protective



layer comprising at least 60% chromium and remainder selected from the group consisting of iron, iron plus nickel and mixtures thereof;

(c) a diffusion zone of high nickel content extending from the base material into the first protective layer (a);

(d) a diffusion zone which is a nickel chromium alloy of variable constitution within the first protective layer (a) and beneath the second protective layer (b) and;

(e) diffusion regions of zirconium nickel alloy of variable zirconium content surrounding the zirconium particles;

the proportions of the metals in the protective layers (a) and (b) being the proportions before the creation of the diffusion zones.

4,284,689

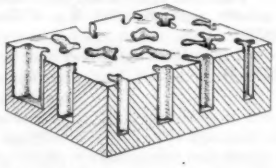
LIGHT-ABSORBING MATERIALS

Harold G. Craighead, Eatontown, and Richard E. Howard, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 7, 1980, Ser. No. 137,602

Int. Cl.³ B32B *15/04*; C23C *15/00*; B32B *3/00*

U.S. Cl. 428—620 **24 Claims**



1. A body with a channeled portion comprising a material forming said body that contains a multiplicity of open voids where the mean depth of said voids is at least 0.3 μm, where 20 to 80 percent of the volume of said channeled portion measured to said mean depth consists of voids, where the channel dimension of said voids is less than 3 μm and where the wall direction over 75 percent of the wall length within any localized area defined by a square 10 μm on side is within 20 degrees of the mean direction for said walls within said localized area.

11. A process for fabrication of a body having voids comprising the steps of bringing a material into close proximity to a sputterable composition such that at least a portion of said sputterable composition is exposed, and sputtering from said sputterable composition to form in situ a mask on said material while anisotropically etching said material.

4,284,690

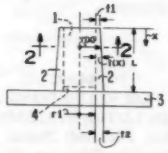
CYLINDRICAL TAPERED SLEEVE OPTIMIZED FOR WEIGHT AND HEAT CONDUCTION

Charles W. Koehler, Milpitas, and Gerrit Van Ommering, San Francisco, both of Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Mar. 4, 1980, Ser. No. 127,160

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—26 **7 Claims**



1. In combination, a cylindrical battery cell which generates substantially uniform amounts of heat along its cylindrical surface; and

a roughly cylindrically shaped sleeve having a top and a bottom, said sleeve fitting snugly around said battery cell and having a uniformly tapered thickness along its longitudinal axis, the greatest sleeve thickness being at the bottom thereof.

4,284,691

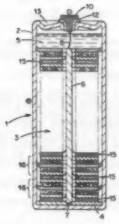
ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, and William T. McHugh, Westwood, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 13, 1980, Ser. No. 159,271

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—105 **26 Claims**



1. An electrochemical cell comprising:

an elongated metal housing having an interior wall;

an elongated metal terminal within and along the direction of the housing; and

an electrochemical system contained within the housing and including an electrolytic solution and a plurality of battery stack components exposed to the electrolytic solution and arranged in a stacked array encircling the elongated metal terminal, said array of battery stack components comprising:

a plurality of metal electrode structures in direct physical contact with the elongated metal terminal and spaced from the interior wall of the housing; and

a plurality of carbon electrode/insulator structures arranged in the array in alternation with the metal electrode structures and each comprising:

a metal substrate spaced from the elongated metal ter-

minal and in direct physical contact with the interior wall of the housing;

first and second porous carbon layers on opposite sides of, and in direct physical contact with, the metal substrate and spaced from the elongated metal terminal, each of said porous carbon layers having a network of electrolyte-conducting channels therethrough for the receipt of, and to be permeated by, the electrolytic solution within the housing; and

first and second porous insulators in direct physical contact with the first and second carbon layers, respectively, and in direct physical contact with adjacent ones of the metal electrode structures and separating the carbon layers from the adjacent metal electrode structures.

4,284,692

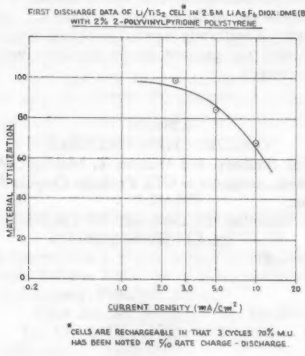
COMPOSITIONS FOR STABILIZING ELECTROLYTES IN LI/TiS_2 SYSTEMS

Bhaskara M. L. Rao, Fanwood; Daniel J. Eustace, Scotch Plains, and Dan Farcasiu, Princeton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 28, 1980, Ser. No. 144,680

Int. Cl.[3] H01M *6/14*

U.S. Cl. 429—194 12 Claims



1. In a current producing Li/TiS_2 electrochemical cell having an electrolyte containing at least one lithium salt solute in a solvent comprising a cyclic ether, at least one composition for inhibiting polymerization of said cyclic ether by TiS_2, said composition being selected from a group consisting essentially of at least one of the following:

(a) Li_xTiS_2

where: x is less than approximately 0.1 and greater than approximately 0.025; and

(b) at least one sterically hindered amine which does not intercalate with TiS_2.

4,284,693

ORIENTING AND SIZING BATTERY GRIDS AND ARTICLES FORMED THEREBY

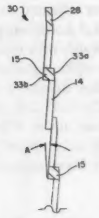
Jerry T. McDowell, Greeneville, Tenn., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 949,934, Oct. 10, 1978, Pat. No. 4,220,030. This application Mar. 28, 1980, Ser. No. 134,831

Int. Cl.[3] H01M *4/74*

U.S. Cl. 429—211 8 Claims

1. A battery grid comprising a metal grid structure defining a header and a lug connecting portion thereon, an open network depending from the header over the entire length thereof, said open network being provided with nodes having



elements projecting therefrom to define cells, said nodes having a right trapezoid cross section.

4,284,694

METHOD FOR IMPROVING THE ADHERENCE OF A PHOSPHOR-PHOTOBINDER LAYER TO A GLASS SUPPORT

Stanley A. Harper, New Providence, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,765

Int. Cl.[3] G03C *5/00*

U.S. Cl. 430—23 10 Claims

1. A method for preparing a luminescent screen upon a glass surface comprising

(a) depositing on said glass surface a layer of an aqueous solution containing polyvinyl alcohol and a water-soluble zirconyl compound,

(b) drying said layer to produce a precoating on said surface,

(c) depositing upon said precoating a coating comprising phosphor particles and a photosensitive binder therefor,

(d) exposing said coating to a light image whereby to form in said coating selected regions of greater solubility and selected regions of lesser solubility,

(e) and then developing said exposed coating by selectively removing said regions of greater solubility.

4,284,695

METHOD OF MANUFACTURING LUMINESCENT SCREENS FOR COLOR-PICTURE TUBES WITH TWO EXPOSURES

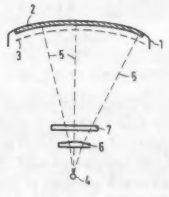
Bruno Fischer, Esslingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 3, 1980, Ser. No. 109,387

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902239

Int. Cl.[3] G03C *5/00*

U.S. Cl. 430—24 7 Claims



1. A method of manufacturing luminescent screens for color-picture tubes consisting of two exposure stages, including the steps of:

providing a faceplate coated with a light sensitive layer of luminescent material,

providing a shadow mask disposed behind said faceplate,

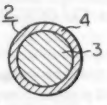
inserting a lens behind said shadow mask,
providing a light source behind said lens,
activating said light source for a first exposure interval so as to provide light to pass through said lens and said shadow mask to said faceplate in order to provide 90% of the total amount of light required to harden said luminescent material, whereby stripes with sharp edge definition are formed on said coated faceplate,
inserting a filter between said mask and said lens, and
activating said light source for a second exposure interval so as to provide light to pass through said lens, said filter and said shadow mask to said faceplate in order to complete the hardening of said layer of luminescent material, wherein the transmission of light through said filter increases towards the vertical edges of said filter with the greatest transmission of light at the diagonal edges of said filter, whereby width stability of the stripes is achieved.

4,284,696

LIGHT TRANSMISSION PARTICLE FOR FORMING COLOR IMAGE

Eisuke Ishida, Nara; Yuji Takashima, Osaka; Hisanori Nishiguchi, Neyagawa; Yoshihide Miyazawa, Toyko, and Katsuichi Motohashi, Urawa, all of Japan, assignors to Hodogaya Chemical Co., Ltd. and Matsushita Electric Industrial Co., Ltd., both of, Japan

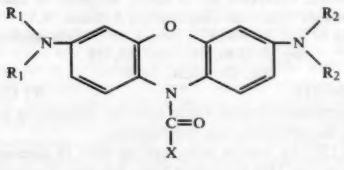
Filed May 15, 1978, Ser. No. 906,120
Claims priority, application Japan, May 20, 1977, 52/59271
Int. Cl.³ B41M *5/18, 5/22;* **G03G** *9/00, 13/01*
U.S. Cl. 430—42 **9 Claims**



4. A light transmitting particle for forming a color image comprising:

(a) a transparent bead selected from the group consisting of a glass bead, an acrylic ester resin bead, a styrene resin bead, a phenol resin bead, an epoxy resin bead and a melamine resin bead;

(b) a colorless sublimable dye layer coated on the surface of said bead, said colorless sublimable dye layer comprising 100 parts by weight of a transparent resin binder and 0.3 to 30 parts by weight of at least one acyl leucophenoxazine compound having a general formula [I]:



[I]

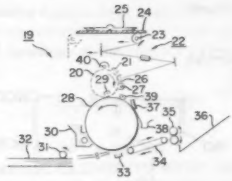
wherein R_1 and R_2 represent lower alkyl groups and X represents an alkyl group substituted with a halogen atom.

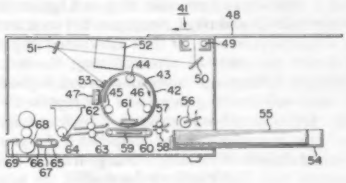
4,284,697

IMAGE FORMATION METHOD

Yujiro Ando; Yukimasa Shinohara, both of Yokohama, and Katsunobu Ohara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 700,850, Jun. 29, 1976, abandoned. This application Apr. 10, 1978, Ser. No. 894,709
Claims priority, application Japan, Jul. 8, 1975, 50/83752
Int. Cl.³ G03G *13/22*
U.S. Cl. 430—53 **30 Claims**





13. An image formation method for forming an image on an image reception member by modulating an ion flow or charged particles at a modulation position with the aid of a screen member having a number of fine passage openings, wherein one of said members has an arcuate cross-section at the modulation position while the other member has a linear cross-section, said method comprising:

forming a primary image on said screen member;

forming a secondary image on said image reception member with ion flow or charged particles modulated by said primary image; and

rotating or moving, during modulation, said screen member and said image reception member at different relative speeds at the modulating position, the peripheral speed of said one member being less than that of said other member, whereby a sharp secondary image corresponding to the primary image is formed on said image reception member.

4,284,698

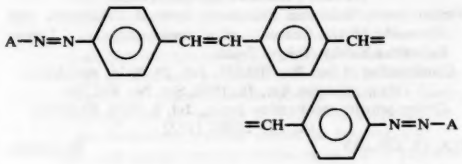
LAYERED ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Takeo Kazami, Numazu; Takamichi Enomoto, Shiroyama; Tatuya Kato, Numazu, and Toshio Fukagai, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

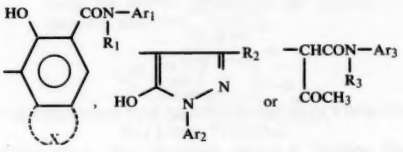
Filed May 6, 1980, Ser. No. 147,306
Claims priority, application Japan, May 15, 1979, 54/58696
Int. Cl.³ G03G *5/06, 5/10*
U.S. Cl. 430—59 **8 Claims**

1. In a layered electrophotographic photoconductor comprising an electroconductive support material and a photoconductive double layer which consists of a charge generation layer and a charge transport layer, the improvement comprising:

a. said charge generation layer comprises a disazo pigment selected from the group consisting of disazo pigments of the formula



where A represents



and X represents an aromatic ring, or a heterocyclic ring, or their substituted rings; Ar_1 represents an aromatic ring, or a heterocyclic ring, or their substituted rings; Ar_2 and Ar_3 each represent an aromatic ring, R_1 and R_1 each represent hydrogen, a lower alkyl group, a phenyl group or their substituted groups; and R_2 represents a lower alkyl group, a carboxyl group or its ester group, and

b. said charge transport layer comprises a charge transport material capable of forming a charge-transfer complex by reaction with 2,4,7-trinitro-9-fluorenone, the light energy value corresponding to the wavelength of the maximum visible spectral absorption of said charge-transfer complex being in the range of 1.6 to 2.1 eV, and being selected from the group consisting of:

9-methyl-3-formylcarbazole-1'-methyl-1' phenylhydrazone,

9-(4-diethylaminostyryl-1)-anthracene,

9-(4-dibenzylaminobenzylidene-1)-fluorene,

9-{4-di-(4-methylbenzyl)aminobenzylidene}-fluorene,

4-methoxy-1-formylnaphthalene-1'-methyl-1'-phenylhydrazone, and

4-dibenzylaminobenzaldehyde-1'-methyl-1'-phenylhydrazone.

3. A layered electrophotographic photoconductor as claimed in claim 1, wherein said charge-transfer material is 9-(4-diethylaminostyryl-1)-anthracene.

4,284,699

POLYESTER BINDER COMPONENT IN MULTILAYER PHOTOCONDUCTIVE ELEMENT

Martin A. Berwick, Kendall, and Edgar E. Riecke, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 768,460, Feb. 14, 1977, Pat. No. 4,173,472, which is a continuation-in-part of Ser. No. 696,248, Jun. 15, 1976, abandoned. This application May 30, 1978, Ser. No. 910,399

Int. Cl.³ G03G *5/05, 5/10*

U.S. Cl. 430—96 **12 Claims**

1. In a multilayer photoconductive element having a photoconductive insulating composition in electrical contact with a conducting layer, the improvement wherein said element comprises, as a component of said photoconductive composition, an amorphous, water-insoluble polyester which is substantially free of any acid functions and is selected from the group consisting of

(a) polyesters having recurring units derived from at least one aromatic dicarboxylic acid component and at least one diol component, at least one of said acid or diol components being a non-linear monomer selected from the group consisting of an isophthalic acid component or a branched-chain alkylenediol having the formula

$$HO—CH_2—R^1—CH_2—OH$$

wherein R^1 is a branched-chain alkylene group having from 2 to about 15 carbon atoms, and

(b) polyester copolymers having recurring units derived from at least one aromatic dicarboxylic acid component and at least one diol component, at least one of said acid or said diol components being a mixture of at least two different acids or two different diols, respectively, so that a copolyester is obtained, and at least one of said acid or one of said diol components being selected from the group consisting of a non-linear monomer as defined above or a cycloaliphatic diol; with the provisos that (1) said photoconductive insulating composition comprises a polymeric binder(s) other than said polyester so that said polyester constitutes about 1 to less than 50 percent by weight based on the total dry weight of all binders contained in said photoconductive insulating composition and is within the range of from about 1 to about 40 weight percent based on the total dry weight of said photoconductive insulating compositions; and (2) said polyester and said other polymeric binder(s) together constitute an optically homogeneous mixture of binders.

4,284,700

POLYMER COATED TRANSITION METAL POWDER AS ELECTROSTATIC IMAGE TONER

Toshihiko Oguchi, Kawasaki; Akio Ishizawa, Ichikawa, and Hiromi Yoshida, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 875,682, Feb. 6, 1978. This application Dec. 19, 1979, Ser. No. 105,275

Claims priority, application Japan, Feb. 4, 1977, 52-10771

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—105 **6 Claims**

1. A toner powder capable of developing permanent visible images from latent electrostatic images comprising a thermoplastic resin and a coated powder comprising a transition metal or compound thereof which is coated with a polymer made from a free radical polymerizable monomer having an E value of (−)0.8 to (+)0.8 by in situ polymerization.

4,284,701

ELECTROPHOTOGRAPHIC TONER OF SPECIFIC SIZE DISTRIBUTION

Jerry J. Abbott, Longmont; Sterritt R. Fuller, Boulder, and Paul D. Jachimiak, Lafayette, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 848,173, Nov. 3, 1977. This application Sep. 3, 1980, Ser. No. 183,701

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—111 **11 Claims**

1. An electrostatographic toner material comprising particles having the following size distributions:

less than 15% by weight being greater than 16 microns in size, from 7 to 15% by weight being less than 5 microns in size, the remainder being from 5 to 16 microns in size, the particle median size by weight being from 8 to 12 microns.

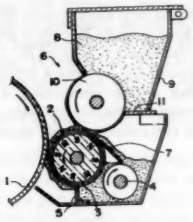
4,284,702
ELECTROGRAPHIC DEVELOPING METHOD

Kenji Tabuchi; Susumu Tanaka; Kenichi Wada; Tateki Oka, and Hiroaki Mizunoe, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 949,426, Oct. 5, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,456

Int. Cl.³ G03G *13/08, 13/09*

U.S. Cl. 430—122 **13 Claims**



1. An electrographic developing method for developing electrostatic latent images which comprises the steps of:

(1) mixing insulating non-magnetic toner particles and carrier granules consisting essentially of an electrical insulating resin and at least 50%, by weight of the carrier granules, of magnetizable fine particles where the carrier granules have the properties of (1) triboelectrically charging the toner particles to a polarity suitable for developing the latent image by frictional contact with the toner particles, (2) being magnetic, (3) having an electro-resistivity of at least 10^{12} ohm-cm, and (4) being all substantially within the size range of 5 to 40 μm; said toner particles being present in an amount of 2–50% by weight of the toner-carrier mixture;

(2) magnetically attracting said mixture onto a developing sleeve which opposes a recording medium with narrow clearance at the developing station of 1.0 mm and under; and

(3) flowing said mixture around the developing sleeve and to the developing station for applying said mixture on an electrostatic latent image formed on the recording medium and for developing said electrostatic latent image into a visible image.

4,284,703
PEEL-APART-DEVELOPABLE LIGHT-SENSITIVE MATERIALS AND IMAGE-FORMING METHOD USING THE SAME

Eiichi Inoue, Tokyo, and Takao Nakayama, Yokohama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 810,828, Jun. 28, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,811

Claims priority, application Japan, Jun. 28, 1976, 51/76742

Int. Cl.³ G03C *5/08, 5/18*

U.S. Cl. 430—142 **15 Claims**

1. A method for forming images which consists of imagewise exposing through an original for a period of about 0.1 seconds to about 60 seconds a light-sensitive element (a) to actinic radiation, said light-sensitive element (a) comprising (i) a first support having coated thereon (ii) a thin layer of a metal or a metal alloy and (iii) a light sensitive composition layer which comprises as a binder at least one organic high molecular weight material having a glass transition temperature of about 110° C. or less selected from the group consisting of polyvinyl acetate, polyvinyl chloride and polyethylene oxide and, as a light-sensitive compound, at least one aromatic azido compound in this order, wherein said actinic radiation decomposes said azido compound; laminating said imagewise exposed light-sensitive element (a) with an adhesive element (b) comprising (i) a second support having coated thereon (ii) an adhesive composition layer having a thickness of about 0.5 μm to about 50 μm, so that the light-sensitive composition layer (iii) of said imagewise exposed light-sensitive element (a) and the adhesive composition layer (ii) of said adhesive element (b) are adjacent each other; heating the product of said laminating to about 100° C. to about 120° C. for 2 minutes or less and then peeling apart, after the product has cooled to room temperature, one of said first support (i) or said second support (ii) from the product whereby a positive opaque metal or metal alloy image of said original is formed on said first support (i) and a negative opaque metal or metal alloy image of said original is formed on said light-sensitive composition layer (iii) said second support, where at least one of said first support and said second support is flexible and functions as the support which peels apart from said product.

4,284,704
PHOTOGRAPHIC ELEMENTS WITH INCORPORATED HYDROGEN SOURCE PHOTOREDUCTANT AND TETRAZOLIUM SALT

James C. Fleming; Joseph W. Manthey, and Ralph T. Brongo, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 714,434, Aug. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 509,616, Sep. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 384,861, Aug. 2, 1973, abandoned. This application Sep. 29, 1978, Ser. No. 947,306

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.³ G03C *1/727, 1/60*

U.S. Cl. 430—154 **17 Claims**

1. In a photographic element comprising a support, a photoreductant, and in chemical association with the photoreductant, a tetrazolium salt capable of reduction by the exposed form of said photoreductant to a formazan dye, said salt and said photoreductant being disposed in at least one layer on said support in amounts effective to photogenerate an image,

the improvement in which said photoreductant incorporates one or more labile hydrogen atoms capable of causing said photoreductant to reduce said salt on exposure to activating radiation in the presence of a base.

4,284,705
PHOTOSENSITIVE DIAZO SALT COMPOSITIONS AND LITHOGRAPHIC PLATE COMPRISING SAME

Georges A. Phlipot, Paris; Jacques R. G. Haeck, Bonneuil-sur-Marne, and Simone J. Kempen, Orly, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

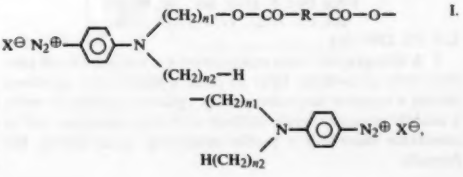
Division of Ser. No. 924,107, Jul. 12, 1978, Pat. No. 4,215,041. This application Dec. 31, 1979, Ser. No. 108,724

Claims priority, application France, Sep. 8, 1977, 77 24471

Int. Cl.³ G03C *1/52, 1/71, 7/08*

U.S. Cl. 430—159 **6 Claims**

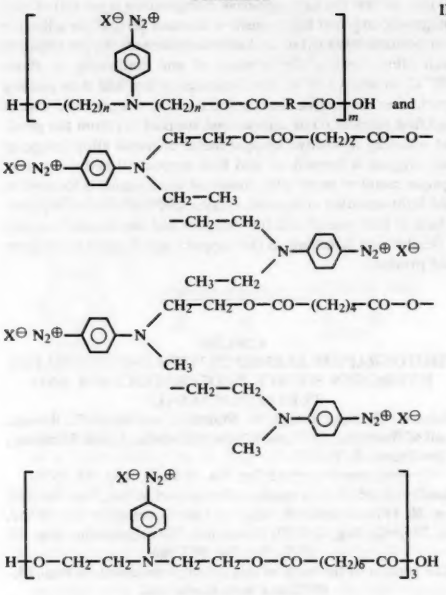
1. A presensitized lithographic plate comprising, on a support, provided with a hydrophilic surface a layer including a diazonium compound corresponding to one of the following general formulas:



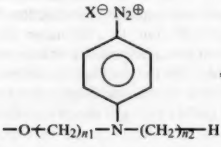
I.

-continued

II.



wherein G' and G² are the same or different and are either OH or



R represents (a) alkylene having 1 to 12 carbon atoms, arylene having 6 to 10 carbon atoms, alkylarylene or alkylarylkylene having 8 to 16 carbon atoms, (b) a photocrosslinkable moiety containing ethylenic unsaturation, and having from 4 to 30 carbon atoms, or (c) a group containing an azide,

m is a number between 2 and 5,

n, n_1 and n_2 are the same or different and are whole numbers from 1 to 4, and

$X^{\ominus}$ is an anion.

4,284,706

LITHOGRAPHIC RESIST COMPOSITION FOR A LIFT-OFF PROCESS

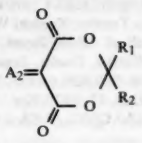
Nicholas J. Clecak; Barbara D. Grant, and Carlton G. Willson, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,806

Int. Cl.³ G03C *1/54, 1/60, 5/00*

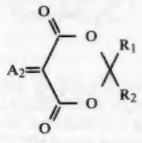
U.S. Cl. 430—191 **8 Claims**

1. A lithographic resist composition for use in a lift-off process with ultra-violet light to form a mask with apertures having a negative slope comprising a phenolic-aldehyde resin, a naphthoquinone diazide sulfonic acid ester sensitizer and in admixture therewith a profile modifying agent having the formula



wherein R_1 is alkyl or aryl having up to 20 carbon atoms, R_2 is H, alkyl or aryl having up to 20 carbon atoms, or together R_1 and R_2 are cycloalkyl and A is N or H.

6. A lift-off process for forming a lithographic resist image comprising baking a film comprising a phenolic-aldehyde resin, a naphthoquinone diazide sulfonic acid ester sensitizer and in admixture therewith a profile modifying agent having the formula



wherein R_1 is alkyl or aryl having up to 20 carbon atoms, R_2 is H, alkyl or aryl having up to 20 carbon atoms, or together R_1 and R_2 are cycloalkyl, and A is N or H at a temperature for a time sufficient for said profile modifying agent to form a skin at the surface of said film,

image-wise exposing said baked film to ultraviolet light, and

dissolving the exposed portions of said film with aqueous alkali to form a mask with apertures having a negative slope.

4,284,707

PHOTOCURABLE LIGHT-SENSITIVE COMPOSITION

Kohtaro Nagasawa, Tokyo; Kunio Morikubo, Soka, and Tsutomu Satoh, Higashi Kurume, all of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

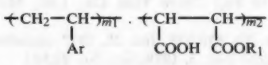
Filed Dec. 29, 1978, Ser. No. 974,458

Claims priority, application Japan, Dec. 30, 1977, 52-160431; Jan. 22, 1978, 53-5503; Apr. 15, 1978, 53-43793

Int. Cl.³ G03C *1/71, 1/68*

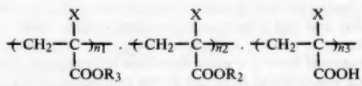
U.S. Cl. 430—196 **18 Claims**

1. A photocurable composition comprising two copolymers a first copolymer being a copolymer having a recurring unit of the general formula (I):



(I)

wherein Ar represents a substituted or unsubstituted phenyl group, R_1 represents a lower alkyl group, and m_1 and m_2 are positive numbers with m_1 being greater than or equal to m_2; and a second copolymer having a recurring unit of the general formula (II):



(II)

wherein R_2 represents a lower alkyl group, X represents a hydrogen atom or a methyl group, and R_3 represents an isobutyl group, a t-butyl group or a $—CH_2Ar$ group where Ar represents a substituted or unsubstituted phenyl group and where R_3 is $—CH_2Ar$, R_2 can also be t-butyl and isobutyl, and

n_1, n_2 and n_3 are positive numbers and $(n_1+n_2)/n_3$ equals to about 0.5 to 20; and containing suitable amounts of a cross-linking agent and a photoactivator.

4,284,708

PHOTOGRAPHIC FILM UNIT FOR THE PRODUCTION OF COLORED TRANSFER IMAGES

Günter Helling, Cologne; Werner Krafft, Leverkusen; Kurt Findeisen, Odenthal, and Wolfgang Himmelmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

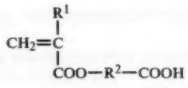
Filed Mar. 19, 1980, Ser. No. 131,635

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911694

Int. Cl.[3] **G03C** *1/40, 1/48*

U.S. Cl. 430—216 **4 Claims**

1. In a photographic film unit for producing colored transfer images containing on a dimensionally stable support layer an image-receiving layer, a photosensitive element comprising at least one photosensitive silver halide emulsion layer and associated thereto a non-diffusing color-providing compound, and a neutralizing element consisting of a neutralizing layer and of a retarding layer which delays neutralization, the neutralizing layer consisting of a copolymer essentially containing polymerized units of ethylenically unsaturated monomers containing acid groups and, optionally, up to 10% by weight of polymerized units of ethylenically unsaturated monomers free from acid groups, the improvement according to which the copolymer contains from 5 to 50% by weight of polymerized units of ethylenically unsaturated monomers corresponding to the following formula



in which

R^1 represents hydrogen or methyl and

R^2 represents an alkylene group containing from 1 to 3 carbon atoms.

4,284,709

PROCESS FOR INCORPORATING PHOTOGRAPHIC ADDITIVES IN HYDROPHILIC COLLOID PREPARATIONS

Ivan Tomka, Bourguillon, Switzerland, assignor to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

Filed May 8, 1980, Ser. No. 147,785

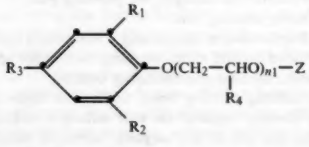
Claims Priority, Application Switzerland, May 15, 1979, 4503-79

Int. Cl.[3] **G03C** *1/10, 1/06*

U.S. Cl. 430—222 **20 Claims**

1. A process for incorporating photographic additives which are sparingly soluble to insoluble in water into a free-flowing, aqueous preparation which contains a hydrophilic colloid and is used to prepare photographic layers, which comprises mixing the photographic additives with

(a) at least one dispersing assistant of the formula



(1)

or

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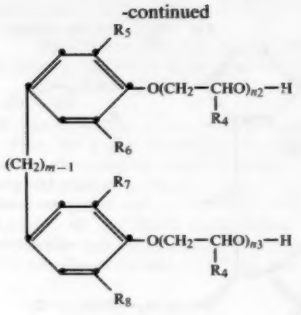
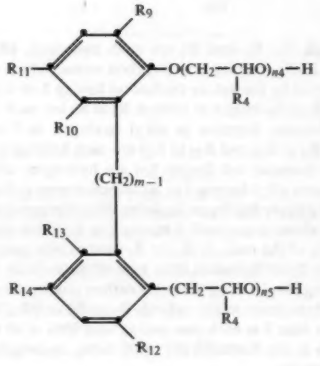


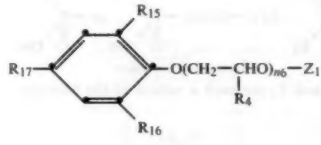
(2)

or



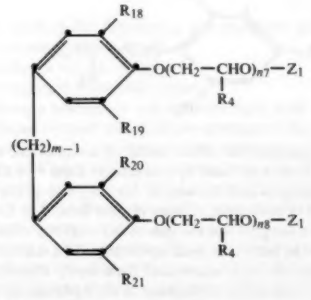
(3)

(b) at least one dispersing assistant of the formula



(4)

or



(5)

or

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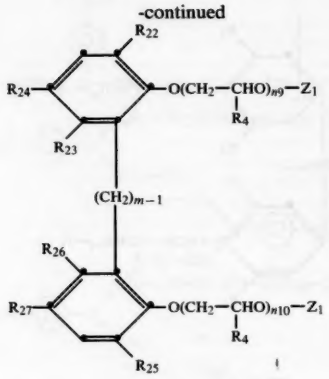
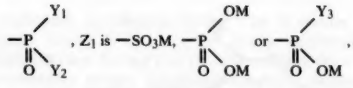


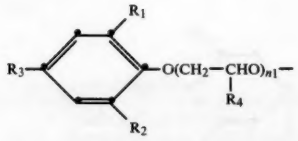
(6)

in which R_1, R_2 and R_3 are each hydrogen, chlorine, bromine, alkyl having 1 to 8 carbon atoms, which can be substituted by phenyl, or cycloalkyl having 5 or 6 carbon atoms, R_4 is hydrogen or methyl, R_5 to R_8 are each hydrogen, chlorine, bromine or alkyl having 1 to 8 carbon atoms, R_9 to R_{14} and R_{22} to R_{27} are each hydrogen, chlorine or bromine and R_{15} to R_{21} are hydrogen, chlorine, bromine or alkyl having 1 to 30 carbon atoms, at least one of the radicals R_1, R_2 or R_3 being alkyl having at least 3 carbon atoms or cycloalkyl having 5 or 6 carbon atoms, at least one of the radicals R_{15} to R_{17} and at least two of the radicals R_5 to R_8 and at least two of the radicals R_{18} to R_{21} being alkyl having at least 3 carbon atoms, the sum of the carbon atoms in the radicals R_5 to R_8 and R_{18} to R_{21} being at least 8 in each case and at least 50% of all the R_4 radicals in the formulae (1) to (6) being hydrogen, Z is hydrogen or



, Z_1 is $-SO_3M$, or ,

Y_1, Y_2 and Y_3 are each a radical of the formula



M is hydrogen, an alkali metal or ammonium, m is an integer from 1 to 5 and n_1 is an integer from 4 to 100, n_2 to n_5 are integers and the sum of (n_2+n_3) and of (n_4+n_5) is 8 to 200 in each case, n_6 is an integer from 1 to 60 and n_7 to n_{10} are integers and the sum of (n_7+n_8) and of (n_9+n_{10}) is 2 to 40 in each case, and, optionally, (c) a solvent which is immiscible with water and then finely dispersing the mixture in an aqueous solution of the hydrophilic colloid, which, optionally, contains further water-soluble or dispersed water-insoluble constituents.

4,284,710

RADIATION CROSSLINKABLE POLYESTERS AND POLYESTERETHERS

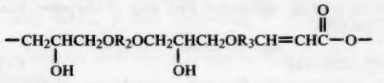
Marion Burg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1980, Ser. No. 145,755

Int. Cl.[3] **G03C** *1/94, 1/68*

U.S. Cl. 430—271 **22 Claims**

1. A class of condensation polymers composed of radiation-sensitive, film-forming, linear polyesters and polyesterethers having within the polymeric backbone a multiplicity of repeating units of the formula:



wherein R_2 is a divalent aryl, alkyl, aralkyl, or cycloalkyl radical having two to twenty carbon atoms, which radical may be substituted with a C_1 to C_{10} alkyl or cycloalkyl, aryl, or halogen group; and wherein R_3 is a divalent aryl, aroyl, arylacryloyl, furylacryloyl, pyridylacryloyl, or thienylacryloyl group in which the aromatic unit for aryl is phenyl, biphenyl, or naphthyl and wherein one of the of the R_3 cyclic carbon atoms is directly attached to the β-carbon of the α,β-ethylenic ester group of the repeating unit, and wherein the aromatic unit of the R_3 group can be substituted with a C_1 to C_8 alkyl or cycloalkyl, aryl, aralkyl, or halogen group.

4,284,711

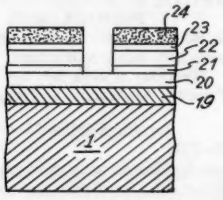
PRESENSITIZED PLANOGRAPHIC PRINTING PLATES WITH COBALT ADHESIVE LAYER

Armando Birlain-Noris, Galileo 101, Mexico City, Mexico (5)

Filed Aug. 21, 1979, Ser. No. 68,435

Int. Cl.[3] **G03F** *7/02;* **G03C** *1/94*

U.S. Cl. 430—276 **4 Claims**



1. A presensitized planographic printing plate comprising

a base sheet consisting essentially of an aluminum sheet, the metal working surface thereof for forming at least one of the elements of the lithographic printing pair,

a presensitizing coating, and

metallic adhesive means comprising a thin cobalt metal layer electroplated on said metal working surface for serving as an adhesive for said presensitizing coating;

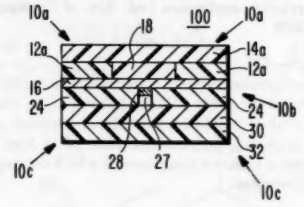
said presensitizing coating being an organic light sensitive coating directly applied on said adhesive cobalt layer, such that the use of any organic adhesive between the metal working surface and said presensitizing coating is avoided.

4,284,712

FABRICATION OF VIDEO DISC FLYLEADS

Edward A. James, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 11, 1980, Ser. No. 167,699
Int. Cl.[3] G03C 5/00, 11/00
U.S. Cl. 430—312 5 Claims



1. A method for preparing a flylead from a beryllium copper alloy sheet having one side include a solder layer pattern comprising the steps of:

(a) age hardening the beryllium copper alloy sheet;

(b) laminating both sides of the alloy sheet with a dry film photoresist;

(c) exposing the first side of the laminated alloy sheet to actinic radiation to record a first pattern comprising the flylead pattern;

(d) exposing the second side of the laminated alloy sheet to actinic radiation to record a second pattern comprising the solder layer pattern;

(e) developing the second pattern to expose the alloy sheet surface;

(f) electroplating the exposed alloy sheet surface with a solder;

(g) relaminating the electroplated alloy sheet second side;

(h) developing the first pattern;

(i) etching the first pattern into the alloy sheet; and

(j) removing the remaining photoresist from both sides of the etched alloy sheet to obtain a flylead having one side include a solder layer pattern.

4,284,713

IMAGE FORMING METHOD

Masamichi Sato, and Itsuo Fujii, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 15, 1976, Ser. No. 666,996
Claims priority, application Japan, Mar. 14, 1975, 50-31479
Int. Cl.[3] G03C 5/00
U.S. Cl. 430—323 54 Claims

1. A method for forming an image comprising in sequence forming a silver image in the emulsion layer of a photographic material which comprises a transparent support having a masking layer thereon, said masking layer having thereon a silver halide emulsion layer, either directly or on at least one subbing layer on the masking layer, by exposing and developing said photographic material, heating said photographic material to thermally decompose the binder of the emulsion layer, selectively removing the thermally decomposed emulsion layer at non-image areas to uncover the masking layer lying thereunder using a binder-removing solution selected from the group consisting of the aqueous solutions containing sodium hypochlorite, potassium hypochlorite, sodium hypobromite, potassium hypobromite, sodium chlorite, potassium chlorite, sodium chlorate, potassium chlorate, sodium bromate and potassium bromate, and then etching away the masking layer at the uncovered areas.

4,284,714

METHOD OF FORMING A PHOTOGRAPHIC IMAGE

Junkichi Ogawa; Mitsugu Tanaka, and Minoru Yamada, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 9, 1980, Ser. No. 148,478
Claims priority, application Japan, May 9, 1979, 54-57430
Int. Cl.[3] G03C 7/00
U.S. Cl. 430—364 9 Claims

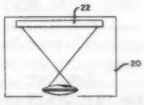
1. A method of forming a photographic image consisting of metallic silver and a dye, comprising imagewise exposing a silver halide photosensitive material to light, development processing said material to form an image in the presence of a naphthalene compound selected from the group consisting of 1,3-, 1,6-2,3-, or 1,7-dihydroxynaphthalene and a p-phenylenediamine type developing agent or a precursor of the p-phenylenediamine compound, and fixing said image.

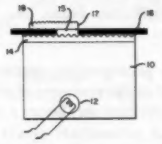
4,284,715

METHOD AND APPARATUS FOR FABRICATING A TRANSLUCENT GRADED DENSITY MEMBRANE

William R. Horst, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 31, 1979, Ser. No. 108,877
Int. Cl.[3] G03C 5/04
U.S. Cl. 430—395 3 Claims





1. A method for fabricating a translucent graded density film, comprising the steps of:

providing a source of light;

diffusing light from said source;

blocking a portion of said diffused light with an apertured opaque element which allows passage of the remainder of said diffused light through said aperture;

further diffusing said light passing through said aperture and causing a portion of said further diffused light to be reflected from the substantially opaque surface of said apertured element; and

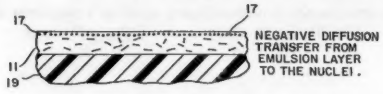
exposing a photosensitive film to said light passing through said aperture and said light reflected from said substantially opaque surface to produce a film exhibiting an incremental gradient in optical density across an area of the film.

4,284,716

BROADBAND REFLECTIVE LASER RECORDING AND DATA STORAGE MEDIUM WITH ABSORPTIVE UNDERLAYER

Jerome Drexler, Los Altos Hills, and Eric W. Bouldin, Woodside, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 55,270, Jul. 6, 1979, and a continuation-in-part of Ser. No. 121,732, Feb. 15, 1980, abandoned. This application Apr. 14, 1980, Ser. No. 140,136
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.[3] G03C *1/84, 1/76;* G02B *27/22;* G03C *5/24*
U.S. Cl. 430—510 8 Claims



1. A reflective data recording medium comprising,

a colloid matrix underlayer disposed on a substrate, said underlayer having primarily filamentary silver particles therein characterized by an optical density to red light between 0.2 and 3.0, and absorptive of visible and infrared light, and

a reflective surface layer primarily of non-filamentary individual silver particles in said colloid matrix, said reflective surface layer disposed atop said underlayer, having maximum silver particle dimensions primarily under 0.05 microns, some of which are aggregated with similar particles, and having a volume concentration of silver particles greater in said surface layer than in said colloid matrix underlayer, said reflective surface layer having at least one area having substantially uniform reflectivity, said uniform reflectivity being between 10% and 75%.

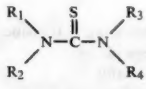
4,284,717

SILVER HALIDE PHOTOGRAPHIC EMULSION

Ichizo Toya, and Yoshiharu Fuseya, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 4, 1979, Ser. No. 100,161
Claims priority, application Japan, Dec. 7, 1978, 53/151594
Int. Cl.[3] G03C *1/02, 1/28*
U.S. Cl. 430—567 22 Claims

1. A silver halide photographic emulsion containing silver halide grains formed in the presence of a silver halide solvent or a salt thereof of the formula (I):



(I)

wherein R_1, R_2, R_3 and R_4 are each a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted nitrogen-containing heterocyclic ring; R_1 and R_2, R_2 and R_3, or R_3 and R_4 when taken together may form a 5- or 6-membered heterocyclic ring; provided that at least one of R_1 to R_4 is a 5- or 6-membered nitrogen-containing heterocyclic ring, an alkyl group or aryl group substituted with an amino group, an alkyl group substituted with a nitrogen-containing heterocyclic ring, or R_1 and R_2, R_2 and R_3, or R_3 and R_4 form a 5- or 6-membered nitrogen-containing heterocyclic ring containing at least two nitrogen atoms.

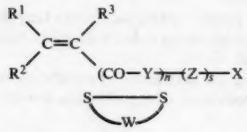
4,284,718

PHOTOGRAPHIC SILVER HALIDE MATERIALS CONTAINING SULFUR CONTAINING POLYMERS

Peter Bergthaller, Cologne; Wilhelm Saleck, Bergisch-Gladbach, and Günter Helling, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,898
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932690
Int. Cl.[3] G03C *1/72*
U.S. Cl. 430—629 6 Claims

1. A photographic element comprising a support and at least one photosensitive silver halide emulsion layer, characterised in that said silver halide emulsion layer contains at least one polymer containing polymerised units of at least one compound A and at least one compound B which correspond to the following formulae:



(A)
(B)

in which

R^1 represents hydrogen or an alkyl group;

R^2 represents hydrogen or an alkoxy carbonyl or carboxyl group;

R^3 represents hydrogen or an alkyl; cycloalkyl; aralkyl or aryl group a heterocyclic radical; or a carboxyl or alkoxy carbonyl group;

Y represents —O— or NR^4—;

R^4 represents hydrogen or an alkyl or hydroxy alkyl group;

Z represents a difunctional organic radical;

X represents hydrogen, a hydroxy group; an —O-alkyl; —S-alkyl; —SO-alkyl or —CO-alkyl group, a carboxyl group or a $—CONR^5R^6$; NR^5R^6 or $—SO_3M$ group or a heterocyclic group;

R^5 and R^6 which may be the same or different represent alkyl groups or, together, represent the atoms required to complete a heterocyclic group;

M represents hydrogen or a cation;

n=0 or 1;

s=0 or 1;

W represents a difunctional hydrocarbon radical which may be interrupted by at least one heteroatom; and/or

R^4 together with Z and/or X represents the atoms required to complete a heterocyclic ring.

4,284,719

SUBSTRATE COMPOSITION AND USE THEREOF

Halina Agerhem, Malmö, and Hans J. Nilsson, Lund, both of Sweden, assignors to Kockums Chemical AB, Malmö, Sweden

Filed Apr. 23, 1980, Ser. No. 143,065
Claims priority, application Sweden, May 17, 1979, 7904320
Int. Cl.[3] C12Q *1/34, 1/00;* C12M *1/40*
U.S. Cl. 435—18 15 Claims

1. A pulverulent enzymatic substrate composition which composition comprises a water-insoluble hydrophobic enzymatic substrate adsorbed on a particulate polyvinyl chloride free of plasticizer and wherein the polyvinyl chloride has an average grain size of at most 0.5 mm, said substrate making up 1–30% by weight of the composition.

4,284,720

PROCESS FOR THE PREPARATION OF 19-HYDROXY STEROIDS OF THE ANDROSTANE AND PREGNANE SERIES

Karl Petzoldt, Berlin, Fed. Rep. of Germany, assignor to Schering, A.G., Berlin, Fed. Rep. of Germany

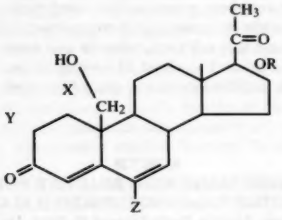
Filed Jan. 14, 1980, Ser. No. 112,683

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901564

Int. Cl.[3] C12P *33/06*

U.S. Cl. 435—58 3 Claims

1. A process for preparing a 19-hydroxy steroid of the formula

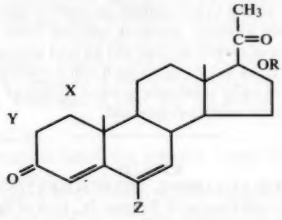


wherein

X and Y each is hydrogen or together represent a carbon-carbon bond or a methylene group,

Z is hydrogen, fluorine, chlorine or methyl, and

R is hydrogen or an acyloxy group of 1–8 carbon atoms, comprising fermenting at 10-methyl steroid of the formula



wherein X, Y, Z and R are as defined above, with a fungal culture of the genus Nigrospora and isolating said 19-hydroxy steroid.

4,284,721

METHOD FOR MANUFACTURING DIPEPTIDES

Kiyotaka Oyama, Shin-nanyo; Shigeaki Nishimura, Kudamatsu; Yuji Nonaka, Shin-nanyo; Tsutomu Hashimoto, and Keiichi Kihara, both of Tokuyama, all of Japan, assignors to Sagami Chemical Research Center; Ajinomoto Co., Inc., both of Tokyo and Toyo Soda Mfg. Co., Ltd., Yamaguchi, all of, Japan

Filed Apr. 1, 1980, Ser. No. 136,347

Claims priority, application Japan, Apr. 3, 1979, 54-40170

Int. Cl.[3] C12P *21/02;* C07C *103/52*

U.S. Cl. 435—70 10 Claims

1. A method for manufacturing a dipeptide from an N-substituted aspartic acid and a phenylalanine lower alkyl ester, said method comprising subjecting said N-substituted aspartic acid and said phenylalanine lower alkyl ester to a reaction in an organic solvent immiscible with water in the presence of a water-containing immobilized metallo-proteinase.

4,284,722

HEAT AND ACID-STABLE ALPHA-AMYLASE ENZYMES AND PROCESSES FOR PRODUCING THE SAME

Masaki Tamuri, Yokosuka; Mitsuo Kanno, Miyoshi, and Yoshiko Ishii, Tokyo, all of Japan, assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 934,135, Aug. 16, 1978, abandoned, which is a continuation of Ser. No. 764,923, Feb. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 678,513, Apr. 19, 1976, abandoned. This application Nov. 13, 1979, Ser. No. 93,407

Int. Cl.[3] C12N *9/28;* C12P *19/14, 19/24, 19/20*

U.S. Cl. 435—94 18 Claims

1. A heat and acid-stable alpha-amylase enzyme derived from a *Bacillus stearothermophilus* microorganism and having a pH optimum between 4.0 and 5.2 characterized as (1) capable of retaining at least about 70% of its initial alpha-amylase activity when held at 90° C. and at a pH of 6.0 for 10 minutes in the absence of added calcium ion; (2) capable of retaining at least about 50% of its initial alpha-amylase activity when held at 90° C. at a pH of 6.0 for 60 minutes in the absence of added calcium ion; and (3) capable of retaining at least about 50% of its initial alpha-amylase activity when held at 80° C. and at a pH of 4.5 for 10 minutes in the presence of 5 mM of calcium ion.

4,284,723

PREPARATION OF EPOXIDES AND GLYCOLS FROM GASEOUS ALKENES

Saul L. Neidleman, Oakland; William F. Amon, Jr., Danville, and John Geigert, Concord, all of Calif., assignors to Cetus Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 914,384, Jun. 14, 1978, abandoned. This application May 16, 1979, Ser. No. 39,337

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.[3] C12P *17/02, 7/18*

U.S. Cl. 435—123 12 Claims

1. A method for the manufacture of epoxides or glycols from a gaseous olefin selected from the group consisting of ethylene, propylene, isobutylene, butene-1, cis-butene-2, trans-butene-2, allene, and 1,3-butadiene, said method comprising providing in a reactor, a reaction mixture of a halogenating enzyme, an oxidizing agent, and a halide ion source, passing the gaseous olefin continuously through said reaction mixture to convert said olefin to a halohydrin, and converting said halohydrin to an epoxide enzymatically.

4,284,724

METHOD OF HIGHLY CONCENTRATED CULTIVATION OF YEASTS

Hideki Fukuda, 1696-2, Honjo, Harima-cho, Kako-gun, Hyogo-ken; Takeshi Shiotani, 2-63, Okihama-cho, Takasago-cho, Takasago-shi, Hyogo-ken, and Wataru Okada, 4-2, Takakura-dai, Suma-ku, Kobe-shi, Hyogo-ken, all of Japan

Continuation of Ser. No. 827,541, Aug. 25, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,225

Int. Cl.[3] C12N *1/16*

U.S. Cl. 435—255 6 Claims

1. A method of highly concentrated aerobic cultivation of yeast cells in a batch process using a cultivating system comprising a fermentor and a separator, said method comprising:

cultivating said yeast cells in said fermentor using a feed liquor comprising carbon source, nutrients and diluting water;

setting the starting—up cell concentration at at least 0.1%;

removing continuously or intermittently from said fermentor during the course of cultivation, a broth containing a portion of said yeast cells and feed liquor in such a manner that the amount of filtrate removed from said separator is within the

range of from 0.3 to 4 times the volume of said feed liquor fed during the course of cultivation;

separating said broth into yeast cells and filtrate, said filtrate containing growth inhibiting substances;

removing said filtrate from the cultivation system;

recycling the total amount of separated yeast cells to said fermentor wherein cultivation is continuing; and

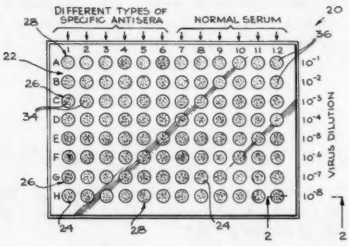
repeating the above steps to bring the final cell concentration between 6% and about 20% thereby to substantially suppress growth of undesired miscellaneous microorgaisms.

4,284,725

VIRUS TITRATION AND IDENTIFICATION SYSTEM

Robert H. Fennel, III, Walkersville, and Robert W. McKinney, Frederick, both of Md., assignors to Dynasciences Corporation, Los Angeles, Calif.

Filed Aug. 13, 1976, Ser. No. 714,072
Int. Cl.³ C12M *1/20*
U.S. Cl. 435—301 **14 Claims**



1. An improved virus titration and identification system comprising, in combination:

(a) a transparent plate having a plurality of spaced wells therein arranged in a plurality of spaced rows in a plurality of orientations;

(b) a plurality of dried aliquots of viable antisera for specific viruses, said aliquots being disposed in wells in separate ones of said rows, one row of a given orientation for each specific virus; and,

(c) a plurality of dried aliquots of normal serum disposed in rows in the remainder of said wells.

4,284,726

COMPOSITE ANION ADSORBENT AND METHOD FOR MAKING SAME

Yasumasa Shigetomi, 5-32, 2-chome, Tsushima-Minami, Okayama, Japan

Filed May 14, 1979, Ser. No. 38,702
Claims priority, application Japan, May 13, 1978, 53-056904
Int. Cl.³ B01J *41/12*; C08K *3/22*
U.S. Cl. 521—28 **4 Claims**

1. A method for producing a composite anion adsorbent comprising the steps of:

preparing organic hydrophilic polymer gel using a compound selected from the group consisting of formalin-crosslinked polyacrylamide, formalin-crosslinked polyvinyl alcohol, metal-crosslinked polyvinyl alcohol, urea-formaldehyde, and formalin-crosslinked dibenzalsorbitol;

mixing into the organic hydrophilic polymer gel an inorganic adsorbent or combination thereof selected from the group consisting of iron hydroxide, hydrated iron oxide, aluminum hydroxide, hydrated aluminum oxide, titanium hydroxide, hydrated titanium oxide, titanic acid, manganese hydroxide, hydrated manganese oxide, tin hydroxide, stannic acid, zirconium hydroxide, hydrated zirconium oxide; and

dehydrating the mixture thus prepared under 50°–100° C.

4,284,727

PROCESS FOR TREATING ANION EXCHANGE RESINS

Eugene J. Boros, South Charleston, and David W. Peck, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,079
Int. Cl.³ L08D *5/20*
U.S. Cl. 521—28 **5 Claims**

1. A process for treating anion exchange resins containing a major portion of weak-base groups in catalytically inactive salt form and a minor portion of strong-base groups in catalytically inactive salt form which comprises contacting said ion exchange resin with an aqueous solution containing ammonium hydroxide and ammonium chloride for a time sufficient to convert said weak-base groups to their catalytically active free amine form while maintaining said strong-base groups in their catalytically inactive salt form, wherein said aqueous solution contains from about 2 to about 12 percent by weight ammonium chloride and from about 1 to about 10 percent ammonium hydroxide.

4,284,728

HR FOAMS MADE WITH REACTIVE POLYOL COMPOSITIONS HAVING IMPROVED STABILITY

John G. Demou, Lincoln Park; Edward R. Pray, Dearborn, and Robert L. McBrayer, Lincoln Park, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 5, 1980, Ser. No. 146,954
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—155 **30 Claims**

1. A reactive mixture for the preparation of a high resiliency polyurethane foam, comprising:

(a) an active-hydrogen containing compound;

(b) a cross-linking agent containing reactive amine; and

(c) an amine reactive stabilizer selected from the group consisting of carbon dioxide and an acid which is reactive with the cross-linking agent such that it reduces the activity thereof to be substantially equal to that of the active-hydrogen containing compound.

4,284,729

PROCESS FOR COLORING THERMOSETTING RESINS

John P. Cross, and George H. Britton, Jr., both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 31, 1980, Ser. No. 135,402
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—158 **12 Claims**

1. A process for coloring thermosetting resins, made by the polyaddition reaction in a reaction mixture of a nucleophile with an electrophile, which comprises adding to the reaction mixture before or during the polyaddition reaction a polymeric liquid reactive coloring agent suitable for incorporation in the resin with the formation of covalent bonds, said coloring agent having the formula:

$$R\text{-(polymeric constituent-X)}_n$$

wherein R is an organic dyestuff radical; the polymeric constituent is selected from polyalkylene oxides and copolymers of polyalkylene oxides in which the alkylene moiety of the polymeric constituent contains 2 or more carbon atoms and such polymeric constituent has a molecular weight of from about 44 to about 1500; and n is an integer of from 1 to about 6; and X is selected from —OH, —NH_2 and —SH, wherein the organic dyestuff radical and polymeric constituent are selected so as to provide said coloring agent in the liquid phase at ambient conditions of temperature and pressure; said coloring agent being added in an amount sufficient to provide coloration of said thermosetting resin.

4,284,730

LIQUID CARBODIIMIDE- AND URETONIMINE-ISOCYANURATE-CONTAINING POLYISOCYANATE COMPOSITIONS AND MICROCELLULAR FOAMS MADE THEREFROM

Thirumurti Narayan, Grosse Ile, and Peter T. Kan, Plymouth, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 7, 1980, Ser. No. 119,273
Int. Cl.[3] C08G *18/14, 18/16, 18/79*
U.S. Cl. 521—160 50 Claims

1. A highly stable liquid carbodiimide- and uretonimine-isocyanurate-containing polyisocyanate composition prepared by partially trimerizing a mixture of an organic polyisocyanate and a carbodiimide- and uretonimine-containing polyisocyanate in the presence of a catalytic amount of a trimerization catalyst followed by deactivating said trimerization catalyst.

6. A process for the preparation of a stable liquid carbodiimide- and uretonimine-isocyanurate-containing polyisocyanate composition comprising partially trimerizing a mixture of an organic polyisocyanate and carbodiimide- and uretonimine-containing polyisocyanate in the presence of a catalytic amount of a trimerization catalyst followed by deactivating said catalyst.

31. In a process for the manufacture of microcellular foams by the reaction of organic polyisocyanates and polyols, catalysts, cross-linking agents, surfactants, and additives, wherein the improvement comprises a highly stable organic polyisocyanate prepared by partially trimerizing a mixture of an organic polyisocyanate and carbodiimide- and uretonimine-containing polyisocyanate in the presence of a catalytic amount of a trimerization catalyst followed by deactivating said catalyst.

4,284,731

POLYURETHANE ADHESIVE COMPOSITIONS CONTAINING DICYCLOPENTENYLOXYALKYL (METH) ACRYLATE

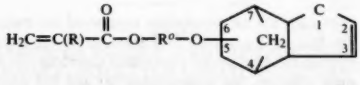
Vincent J. Moser, Hatboro, and Robert A. Slowik, Levittown, both of Pa., assignors to Rohm and Haas, Philadelphia, Pa.

Filed Mar. 3, 1980, Ser. No. 126,758
Int. Cl.[3] C08G *18/10*
U.S. Cl. 525—28 11 Claims

1. A spreadable laminating adhesive composition comprising, as its essential components,

(a) from about 30% to about 50% by weight of a urethane prepolymer derived from the reaction of a member selected from the group consisting of a hydroxyl-terminated polyether and a hydroxyl-terminated polyester with an organic polyisocyanate, the urethane prepolymer having a free —NCO content of from about 2% to 8% by weight thereof,

(b) from about 70% to about 50% by weight of at least one member selected from the group consisting of dicyclopentenyloxyalkyl acrylate and dicyclopentenyloxyalkyl methacrylate represented by the formula



wherein R is selected from the group consisting of H and CH_3, and R^o is selected from the group consisting of (i) a C_2–C_8 divalent alkylene group and (ii) a C_2–C_8 divalent oxyalkylene group,

(c) from about 1% to about 3% by weight, based on the total amount of components (a) and (b), of at least one polyol,

(d) a small but effective amount of a catalyst for the condensation reaction of the urethane prepolymer of (a) with the polyol of (c), and

(e) a small but effective amount of a catalyst for the polymerization of component (b).

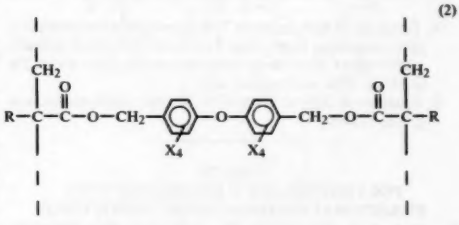
4,284,732

HALOGEN-CONTAINING UNSATURATED BIS-ESTERS AND POLYMERS AND COPOLYMERS BASED ON THESE ESTERS

Egon N. Petersen, Neukirchen-Seelscheid; Norbert Vollkommer, Troisdorf; Georg Blumfeld, St. Augustin; Hermann Richtzenhain, Much-Schwellenbach, and Wilhelm Vogt, Cologne, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 815,464, Jul. 13, 1977, abandoned, which is a division of Ser. No. 780,577, Mar. 23, 1976, Pat. No. 4,149,008. This application Jul. 19, 1979, Ser. No. 59,091
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612843
Int. Cl.[3] C08L *67/06;* C08F *222/20*
U.S. Cl. 252—609 9 Claims

1. A polymer containing basic units with the structural formula



(2)

in which R represents hydrogen or a methyl group and of the 8X substituents 7X to 8X representing chlorine or bromine and up to 1X represents hydrogen.

4,284,733

THERMOPLASTIC COMPOSITION CONTAINING A POLY(METHYL ETHENYL BENZENE) RESIN AND A POLY(PHENYLENE OXIDE) RESIN

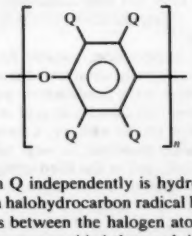
Robert V. Russo, Brooklyn, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,901
Int. Cl.[3] C08L *25/16, 71/04*
U.S. Cl. 525—68 12 Claims

1. A polymeric composition comprising homogeneous and compatible blend of about

(a) 20 to 80 weight percent poly(methyl ethenyl benzene) resin comprising at least 50 weight percent of polymerized units derived from a mixture of isomers of methyl ethenyl benzene consisting essentially of 0 to 0.1 percent by weight 1-methyl-2-ethenyl benzene, 0 to 15 weight percent, 1-methyl-3-ethenyl benzene, and at least 85 weight percent 1-methyl-4-ethenyl benzene; and

(b) 80 to 20 weight percent of a poly(phenylene oxide) resin having the formula



wherein each Q independently is hydrogen, a hydrocarbon radical, a halohydrocarbon radical having at least two carbon atoms between the halogen atom and phenyl nucleus, or halogen, provided that each is free of a tertiary carbon atoms; and n is at least 20.

7. The composition of claim 1 wherein said poly(methyl ethenyl benzene) resin is a high impact copolymer comprising a backbone polymer chain which is a polymer selected from the group consisting of polybutadiene, a styrenebutadiene rubber, an ethylene-propylene rubber, an ethylene-propylene-diene elastomer, and a nitrile rubber; and polymeric units derived from said polymerizable mixture of methyl ethenyl benzene isomers grafted thereto.

4,284,734

MOLDABLE BLEND OF INTERPOLYMER OF RUBBER, METHACRYLIC ACID AND STYRENE WITH POLYURETHANE

Clarence E. Chaney, Verona, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Sep. 11, 1980, Ser. No. 186,030
Int. Cl.³ C08L *75/04, 75/06*
U.S. Cl. 525—92 **1 Claim**

1. Thermoplastic molding compositions consisting of a blend of:

A. From about 40% to about 70% by weight of an interpolymer comprising from about 8 to about 16% block polyalkadiene about 51 to about 85% styrene and from about 5% to about 45% methacrylic acid.

B. From about 30% to about 60% of a polyurethane thermoplastic rubber.

4,284,735

POLYPHENYLENE OXIDE BLEND WITH RUBBER-MALEIMIDE-STYRENE COPOLYMER

Ronald A. Fava, Monroeville, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Jun. 23, 1980, Ser. No. 162,000
Int. Cl.³ C08L *53/00*
U.S. Cl. 525—93 **2 Claims**

1. A thermoplastic molding composition which comprises:

A. about (50±15)% polyphenylene oxide.

B. about (50±15)% interpolymer of three components

(aa) a rubbery block copolymer prepared using a butyl lithium catalyst from 5 to 35% vinyl aromatic compound and from 65 to 95% conjugated alkyldiene, said rubbery block copolymer constituting from 5% to 35% of the interpolymer of three components;

(bb) maleimide constituting from 5% to 35% of the interpolymer of three components; and

(cc) styrene constituting from 60% to 90% of the interpolymer of three components.

4,284,736

UNSATURATED POLYESTER COMPOSITIONS

Lowell R. Comstock, South Charleston, and Percy L. Smith, Dunbar, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 107,514, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 8,070, Feb. 2, 1970, abandoned, and Ser. No. 72,798, Sep. 16, 1970, Pat. No. 3,718,714. This application Feb. 26, 1973, Ser. No. 336,121
The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.
Int. Cl.³ C08L *67/06*
U.S. Cl. 525—169 **32 Claims**

1. A polyester composition, suitable for use in molding, comprising an ethylenically unsaturated monomer, an unsaturated polyester which is the condensation product of an ethylenically unsaturated polycarboxylic acid or anhydride and a polyol, and, as a low profile additive, a thermoplastic terpolymer of a vinyl halide monomer, a vinyl ester of a saturated, monocarboxylic acid, and as the third component of said terpolymer an unsaturated dicarboxylic acid or anhydride thereof; or as the third component a glycidyl ester of an unsaturated, monocarboxylic acid, said terpolymer being present in said composition in an amount of about 1 to about 85 percent by weight based on the weight of said unsaturated polyester, wherein said terpolymer contains (a) at least about 45 weight percent polymerized vinyl halide, (b) from about 0.25 to about 10 weight percent of polymerized unsaturated dicarboxylic acid or anhydride thereof, or from about 1 to about 15 weight percent of polymerized glycidyl ester of an unsaturated, monocarboxylic acid, and (c) the remainder of said terpolymer being polymerized vinyl ester of a saturated, monocarboxylic acid.

4,284,737

PROCESS FOR DEWATERING A GRAFTED RUBBER LATEX

Robert L. Kruse, Belchertown, and Wan C. Wu, Longmeadow, both of Mass., assignors to Monsanto Company, St Louis, Mich.

Continuation-in-part of Ser. No. 945,983, Sep. 27, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,439
Int. Cl.³ C08F *279/04*
U.S. Cl. 525—243 **18 Claims**

1. A process for dewatering a grafted diene rubber aqueous latex comprising:

A. mixing a grafted diene rubber latex, said diene rubber being rubber particles grafted with alkenyl aromatic and alkenyl nitrile monomer, said rubber particles being emulsified in said aqueous latex by an anionic surfactant, with an alkenyl nitrile monomer and optionally an alkenyl aromatic monomer,

B. dispersing a cationic surfactant into said latex an amount sufficient to deemulsify said rubber particles,

C. extracting said grafted diene rubber particles into said monomers as a liquid oil phase, said aqueous latex forming a separate water phase, and

D. separating said water phase from said liquid oil phase, said oil phase having said grafted diene rubber particles evenly dispersed therein and being essentially free of said water phase.

4,284,738

ETHYLENE-PROPYLENE BLOCK COPOLYMERIZATION PROCESS AND PRODUCT

Edward A. Zukowski, Clark, N.J., assignor to El Paso Polyolefins Company, Paramus, N.J.

Filed Aug. 11, 1980, Ser. No. 177,296
Int. Cl.³ C08F *297/08*
U.S. Cl. 525—247 **24 Claims**

1. A continuous sequential vapor phase block copolymerization process for the production of impact resistant ethylene-propylene polymers at high productivity rates, which comprises:

(A) providing a preformed propylene polymer in finely divided form, said preformed polymer containing active catalyst residues and having been prepared by polymerizing propylene in the presence of a catalyst composition containing the components

(a) an aluminum trialkyl or an aluminum trialkyl at least partially complexed with an electron donor compound, and

(b) titanium tri- or tetrahalide supported on magnesium dihalide, or a complex of a titanium tri- or tetrahalide with an electron donor compound supported on magnesium dihalide, the components (a) and (b) being provided in a molar ratio of Al/Ti between about 10 and about 200;

(B) introducing said preformed polymer, ethylene and propylene into at least one continuously agitated reaction zone,

(C) introducing an additional quantity of component (a) to said reaction zone, said quantity ranging from about 5 to about 50% of the quantity in the preparation of the prepolymer; and

(D) polymerizing said ethylene and propylene monomers in the vapor phase in the reaction zone onto said preformed propylene prepolymer.

4,284,739
BLOCK COPOLYMERIZATION PROCESS

Edward A. Zukowski, Clark, N.J., assignor to El Paso Polyolefins Company, Paramus, N.J.

Filed Jul. 27, 1979, Ser. No. 64,961
Int. Cl.³ C08F *255/04*
U.S. Cl. 525—268 **11 Claims**

1. A continuous sequential vapor phase block copolymerization process for the production of impact resistant ethylene-propylene polymers at high productivity rates, which comprises:

(A) providing a preformed propylene polymer in finely divided form, said preformed polymer containing active catalyst residues and having been prepared by polymerizing propylene in the presence of a catalyst composition containing the components

(a) an aluminum trialkyl at least partially complexed with an aromatic acid ester electron donor compound wherein the aluminum trialkyl is one containing from 1 to 8 carbon atoms in the alkyl groups and the molar ratio of trialkyl aluminum to electron donor ranges between 2 and about 5, and

(b) a complex of a titanium tri- or tetrahalide with an aromatic acid ester electron donor compound supported on magnesium dihalide wherein the titanium content of component (b) is about 1 and about 3 weight percent,

wherein catalyst components (a) and (b) are provided to the reaction zone in a molar ratio of Al/Ti of between about 10 and about 200;

(B) introducing said preformed polymer into at least one continuously agitated reaction zone;

(C) introducing ethylene and propylene monomers to said reaction zone in a molar ratio of ethylene to propylene of from about 0.15 to about 0.3;

(D) polymerizing said ethylene and propylene monomers in the vapor phase in the reaction zone onto said preformed propylene prepolymer at a temperature of from about 50° F. to about 210° F.

4,284,740
ACRYLATE COPOLYMERS GRAFTED ONTO A POLAR, WATER-SOLUBLE BACKBONE POLYMER

Eugene Y. C. Chang, Bridgewater, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation of Ser. No. 965,115, Nov. 30, 1978, abandoned.
This application Mar. 31, 1980, Ser. No. 136,127
Int. Cl.³ C08F *265/10, 261/04*
U.S. Cl. 525—292 **11 Claims**

1. A sulfur vulcanizable elastomer composition comprising (A) from about 20 to 40 weight percent, based on the total weight of said vulcanizable elastomer, of a polar water-soluble backbone polymer having grafted thereon (B) from about 60 to 80 weight percent, same basis, of a copolymer of a major proportion of one or more esters of acrylic acid and a minor proportion of an active halogen containing monoethylenically unsaturated ester or ether comonomer.

4,284,741
POLYMERS OF CONJUGATED DIENES WHICH HAVE TERMINAL CONJUGATED UNSATURATED ALICYCLIC FUNCTIONAL GROUPS

Carl A. Uraneck, and John E. Burleigh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

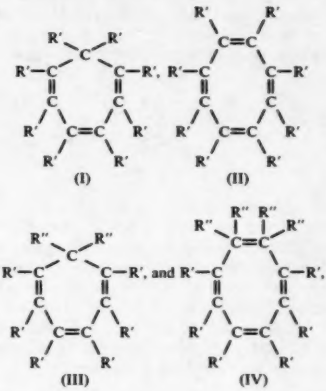
Division of Ser. No. 55,680, Jul. 10, 1979, Pat. No. 4,258,162.
This application Sep. 12, 1980, Ser. No. 186,786
Int. Cl.³ C08F *4/48*; C08C *19/32, 19/40*
U.S. Cl. 525—297 **46 Claims**

1. The process for the preparation of a conjugated diene polymer containing alicyclic conjugated unsaturated functional groups which comprises:

(a) polymerizing at least one conjugated diene hydrocarbon monomer, optionally further employing a hydrocarbon monovinylarene comonomer, employing an organolithium initiator, under anionic solution polymerization conditions, thereby preparing a polymerization admixture containing a conjugated diene polymer containing active lithium termination,

wherein said organolithium initiator is selected from the group consisting of (B) hydrocarbyl monolithium initiators, and (C) hydrocarbonic lithium multichelic initiators, and therefore (b) treating said polymerization admixture by treating mode (E),

wherein said treating mode (E) employs at least a stoichiometric amount an alicyclic unsaturated triene or tetraene selected from the group consisting of

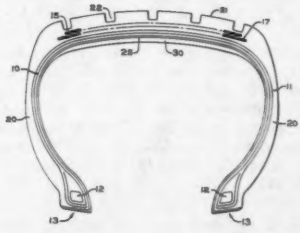


wherein R′ is hydrogen or alkyl such that the total number of carbon atoms in the molecule does not exceed 20, and R″ is R′, chlorine, bromine, or iodine, with the proviso that only one R″ is halogen in each molecule of said (III) or (IV), thereby resulting in a conjugated diene polymer containing terminal conjugated unsaturation.

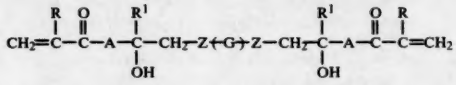
4,284,742
PUNCTURE-SEALING TIRE

Harold H. Bowerman, Jr., Fairview Park, and Robert W. Ireland, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

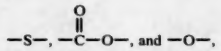
Division of Ser. No. 791,759, Apr. 28, 1977, Pat. No. 4,214,619.
This application Jan. 21, 1980, Ser. No. 113,883
Int. Cl.³ C08F *8/32*; B60C *5/14, 17/00*
U.S. Cl. 525—329 **5 Claims**



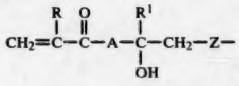
1. A tire sealant composition comprising: (1) at least one vinylidene-terminated polymer having the formula



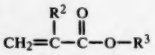
wherein Z is selected from the group consisting of



A is a bivalent radical containing 1 to 10 atoms wherein at least one of said atom is selected from the group consisting of C, O, S and N, R and R^1 are hydrogen or alkyl radicals containing 1 to 4 carbon atoms, and G is a polymeric backbone comprising carbon-carbon linkages, said vinylidene-terminated polymer containing an average of from about 1.5 to about 4



groups per molecule, wherein said backbone comprising carbon-carbon linkages contains polymerized units of at least one vinylidene monomer having at least one terminal $CH_2=C<$ group said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, (e) acrylic acids and acrylates having the formula



said R^2 being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R^3 being hydrogen, an alkyl or hydroxy alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms; and

(2) at least one amine selected from the group consisting of N-(2-aminoethyl) piperazine and 1,3-di-4-piperidylpropane.

4,284,743

PROCESS FOR THE CROSS-LINKING OF HIGH DENSITY POLYETHYLENE WITH DIENE UNITS IN SOLID STATE

Gian P. Giuliani, and Roberto Paiella, both of San Donato Milanese, Italy, assignors to Anic S.p.A., Palermo, Italy

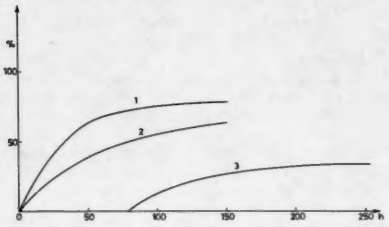
Continuation of Ser. No. 891,274, Mar. 28, 1978, abandoned, which is a continuation of Ser. No. 692,776, Jun. 4, 1976, abandoned. This application Dec. 17, 1979, Ser. No. 104,389

Claims priority, application Italy, Jun. 6, 1975, 24078 A/75

Int. Cl.[3] **C08C** *19/20, 19/22*

U.S. Cl. 525—349 **2 Claims**

1. A process for cross-linking high density polyethylene containing diene unsaturation in the amount of 0.1 to 100 double bonds per 1000 carbon atoms which comprises melt-mixing said high density polyethylene with a sulfur based vulcanizing system and at a temperature of from 150°–180° C. for a period of time that avoids any premature cross-linking and thereafter heating said polyethylene at a temperature of



from 100°–130° C. to obtain high density cross-linked polyethylene.

4,284,744

POLYMERS CONTAINING CHEMICALLY BONDED METAL ATOMS

Robert C. Shaffer, Playa del Ray, Calif., assignor to Hitco, Irving, Calif.

Division of Ser. No. 893,622, Apr. 5, 1978, Pat. No. 4,185,043, Continuation-in-part of Ser. No. 714,403, Aug. 16, 1976, Pat. No. 4,087,482. This application Sep. 14, 1979, Ser. No. 75,593

Int. Cl.[3] **C08L** *67/06*

U.S. Cl. 525—389 **2 Claims**

1. A thermosetting polymer obtained by reacting a thermoplastic polymer with a vinyl monomer crosslinking agent, said thermoplastic polymer containing tungsten and/or molybdenum metal atoms chemically bonded in the polymer chain, said thermoplastic polymer comprising the reaction product of (1) a metal complex which is a reaction product of tungsten carbonyl and/or molybdenum carbonyl with pyrrolidine and (2) a condensation product of an ethylenically unsaturated dicarboxylic acid or anhydride and a polyhydric alcohol, said condensation product containing free carboxyl groups.

4,284,745

CROSS-LINKABLE SATURATED POWDEROUS COMPOSITIONS AND POWDEROUS PAINTING AND COATING COMPOSITIONS CONTAINING SAME

Jacques Meyer, Paris, and Daniel Bernelin, Ris-Orangis, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 833,953, Sep. 16, 1977, Pat. No. 4,182,840. This application Mar. 26, 1979, Ser. No. 24,008

Claims priority, application France, Sep. 22, 1976, 76 28415; May 9, 1977, 77 14039; Jul. 11, 1977, 77 21240

Int. Cl.[3] **C08G** *63/76, 18/82, 59/16*

U.S. Cl. 525—408 **24 Claims**

1. A powderous homogeneous saturated binder composition of matter adapted for coatings having a nonglossy surface comprising:

(a) at least one cross-linkable epoxide resin;

(b) a sufficient amount of a cross-linking agent therefor having functional groups selected from the group consisting of acid groups and acid anhydride groups; and,

(c) a catalytic amount of a salt of an at least bivalent metal ion and an organic anion selected from the group consisting of carboxylic anions and acetylacetonate.

4,284,746

PERFLUOROALKYL-SUBSTITUTED AMINES AS EPOXY RESIN CURING AGENTS

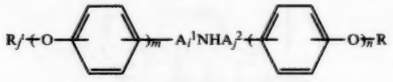
Akira Ohmori, Ibaraki, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 12, 1979, Ser. No. 84,436
Claims priority, application Japan, Oct. 14, 1978, 53-126505; Oct. 14, 1978, 53-126507
Int. Cl.³ C08G 59/50
U.S. Cl. 525—510 16 Claims

1. An epoxy resin composition comprising:

(1) an epoxy resin containing two or more epoxy groups per molecule and

(2) an amine containing at least one perfluoroalkyl group and one or more primary and/or secondary amino groups per molecule of the formula:



wherein R_f is a C_1–C_{15} perfluoroalkyl group, R is a hydrogen atom, a C_1–C_{16} alkyl group, a phenyl group having or not 1 to 4 substituents selected from the group consisting of halogen atoms and C_1–C_4 alkyl groups, a phenyl(C_1–C_4) alkyl group having or not on the benzene ring 1 to 4 substituents selected from the group consisting of halogen atoms and C_1–C_4 alkyl groups, a tri(C_1–C_3) alkoxysilyl group or a C_1–C_{15} perfluoroalkyl group, A^1 and A^2 are each a C_1–C_4 alkylene group, a C_2–C_4 alkylene group substituted with one or two hydroxyl groups, a methyleneoxy(C_3–C_4)alkylene group in which one of the hydrogen atoms in the alkylene moiety is substituted with a hydroxyl group or a phenylene group and i, j, m and n are each 0 or 1, at least one of them being 1.

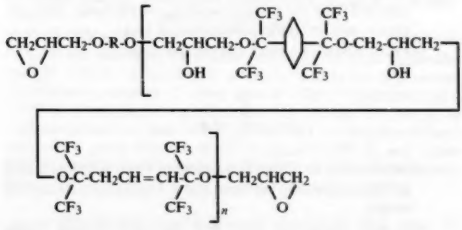
4,284,747

CIS-TRANS FLUOROPOLYOL POLYACRYLATE

James R. Griffith, Riverdale Heights, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 962,856, Nov. 22, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,203
Int. Cl.³ C08L 63/00
U.S. Cl. 525—530 11 Claims

1. A cis-trans fluoropolyol acrylate prepared from a fluoropolyol having the structural formula:



wherein R is selected from the group consisting of $-C(CF_3)_2C_6H_4C(CF_3)_2-$ and $-C(CF_3)_2CH_2CH{=}CH(CF_3)_2C-$, R′ is selected from the group consisting of —H and $-(CF_2)_xF$, n has an average value of 4 to 10, and x is from 0 to 8; said cis-trans fluoropolyol acrylate exhibiting at least 60 percent esterification based on the number of epoxy and secondary hydroxyl groups.

4,284,748

OLEFIN POLYMERIZATION

Melvin B. Welch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 7, 1979, Ser. No. 73,467
Int. Cl.³ C08F 4/02, 10/02
U.S. Cl. 526—119 15 Claims

1. A catalyst for the polymerization of olefins consisting essentially of two components wherein

component A is formed in an inert hydrocarbon diluent by

(1) reacting a silicon-containing finely divided solid in which the silica content ranges from about 80–100 weight percent with a tetravalent titanium alkoxide compound in which the alkyl group of the alkoxide contains from 1 to about 12 carbon atoms;

(2) contacting the product obtained in step (1) with an organomagnesium compound wherein the organo portion is a hydrocarbyl group of 1 to about 12 carbon atoms; and

(3) treating the product obtained in step (2) with a titanium tetrahalide; and

component B is a metallic hydride or organometallic compound wherein said metal is selected from a metal of Groups IA, IIA, and IIIA of the Periodic Table.

4,284,749

CONTINUOUS WEAR HYDRATABLE, BOILABLE METHYLMETHACRYLATE COPOLYMER CONTACT LENS

Charles W. Neefe, P.O. Box 429, Big Spring, Tex. 79720

Filed Jul. 23, 1979, Ser. No. 59,972
Int. Cl.³ C08F 20/58; G02C 7/04
U.S. Cl. 526—304 6 Claims

1. A material for making flexable, nonelastic, oxygen permeable contact lenses having an oxygen equivalent of 7.8% at a thickness of 0.20 milimeter which may be sterilized by heat or chemicals, made of a copolymer comprising, 100 parts by weight methylmethacrylate monomer copolymerized with from 1 to 50 parts by weight of N-(1,1-dimethyl-3-oxobutyl) acrylamide monomer and 2 to 30 parts by weight methacrylic acid and 1 to 20 parts by weight propylene glycol monomethacrylate.

4,284,750

POLYURETHANE RESINS

Charles J. Amirsakis, Lake Geneva, Wis., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Jun. 20, 1980, Ser. No. 161,495
Int. Cl.³ C08G 18/42
U.S. Cl. 528—79 26 Claims

1. A thermoplastic polyurethane composition characterized by excellent mechanical and thermal properties, high hardness and the capability of binding or adhering to magnetic pigments, said composition being essentially free of cross-links and comprising the reaction product of:

(A) an hydroxyl-terminated polyester which is the reaction product of 1,4-cyclohexanedimethanol and a dicarboxylic acid selected from the group consisting of adipic acid, azelaic acid and 1,12-dodecanedioic acid or mixtures thereof, said polyester having an hydroxyl number of from about 50 to about 250,

(B) a chain extender selected from the group consisting of ethylene glycol, propylene glycol, 1,4-butanediol, 1,3-butanediol, 1,5-pentanediol, 1,6-hexanediol, 1,4-cyclohexanedimethanol and hydroquinone di(β-hydroxyethyl) ether, the resultant hydroxyl number of said polyester and chain extender together being from about 130 to about 300, and

(C) an aliphatic or aromatic diisocyanate in an amount substantially equivalent to the molar quantity of (A) plus (B).

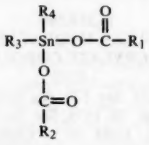
4,284,751
POLYURETHANE SEALANT SYSTEM

Jack W. Hutt, Tarzana, and Fernando E. Blanco, Arleta, both of Calif., assignors to Products Research & Chemical Corp., Burbank, Calif.

Filed May 14, 1980, Ser. No. 149,586
Int. Cl.[3] C08G *18/10, 18/80*
U.S. Cl. 528—45 29 Claims

1. A polyurethane sealant which when exposed to ambient moisture will cure rapidly to form a seal having high tensile strength consisting essentially of

(A) a polyurethane polymer containing terminal isocyanate groups in an amount of not more than about 2.0 weight % based on the weight of said polyurethane, said terminal isocyanate groups being blocked to prevent further reaction by a volatile blocking agent, said polyurethane polymer being the reaction product of (1) a liquid poly (lower) alkylene ether polyol having a molecular weight of greater than about 6,000 and from three to five hydroxyl groups with (2) a sterically unhindered aromatic diisocyanate; (B) a catalytic curing effective amount of (a) an organic bismuth salt selected from the group consisting of bismuth tri-(2-ethyl hexoate) and bismuth tri-(neo-decanoate) and (b) an organic tin salt of the formula:



wherein each of R_1 and R_2 is alkyl of from 1 to 12 carbon atoms and each of R_3 and R_4 are lower alkyl; (C) up to 200 weight %, based on the weight of the polyol, of inert fillers: and (D) up to 100 weight %, based on the weight of the polyol, of polyurethane compatible plasticizers.

4,284,752
PROCESS FOR PRODUCING CROSSLINKED UNSATURATED POLYMERS BY REACTION OF β-AMINOCROTONIC ACID ESTERS, NITRILES OR AMIDES WITH POLYISOCYANATES

Theobald Haug, Frenkendorf, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 8, 1980, Ser. No. 147,991
Claims priority, application Switzerland, May 8, 1979, 4309/79
Int. Cl.[3] C08G *18/00*
U.S. Cl. 528—68 15 Claims

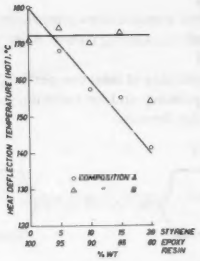
1. A process for producing crosslinked unsaturated polymers, which process comprises reacting monomeric or oligomeric β-aminocrotonic acid esters or β-aminocrotonic acid nitriles or β-aminocrotonic acid amides with polyisocyanates, the composition of the reaction mixture being such that to one molecular group of the formula

of the respective β-aminocrotonic acid derivative there is at least one isocyanate group.

4,284,753
HEAT CURABLE POLYEPOXIDE-UNSATURATED AROMATIC MONOMER RESIN COMPOSITIONS

Ralph W. Hewitt, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 14, 1980, Ser. No. 140,026
Int. Cl.[3] C08G *59/42*
U.S. Cl. 528—89 18 Claims



1. A heat-curable composition comprising:

(1) from about 50 to about 99 parts by weight of a polyepoxide possessing more than one vic-epoxy group,

(2) from about 1 to about 50 parts by weight of an unsaturated aromatic monomer,

(3) from about 0.25 to about 2.0 stoichiometric equivalents based on the polyepoxide of a carboxyl-containing compound,

(4) an epoxy curing accelerator composition comprising from about 0.001 to about 10 parts by weight per 100 parts by weight of the polyepoxide of an onium compound, and

(5) a curing amount of a free-radical curing agent.

4,284,754
OLIGOMERIC PHOSPHATE/AMINO COMPOSITION

Mohinder S. Chattha, Livonia, and Henk vanOene, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

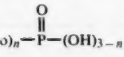
Filed Jan. 4, 1980, Ser. No. 109,597
Int. Cl.[3] C08G *59/40;* C08L *63/00*
U.S. Cl. 528—107 8 Claims

1. A thermosetting composition which exclusive of pigments, solvents and other nonreactive components consists essentially of:

(A) an oligomeric hydroxy functional phosphate ester having a number average molecular weight of between about 500 and about 5000 and being prepared by reaction of:

(i) polyepoxide resin having a number average molecular weight of between about 120 and about 4500 and being selected from the group consisting of aliphatic, cycloaliphatic and aromatic polyepoxides; and

(ii) acid phosphate ester having the formula



wherein n = 1 to 2 and R is selected from alkyl and aryl groups containing between about 1 and about 20 carbon atoms,

said acid phosphate ester and said polyepoxide being reacted in such amounts that there are between about 0.7 and about 1.1 acid groups per epoxy group in said reaction mixture;

(B) up to about 50 weight percent based on the total weight of components (A), (B) and (C) of a hydroxy functional compound having a number average molecular weight of between about 120 and about 4000; and

(C) an amine aldehyde crosslinking agent in an amount

ranging from about 15 to about 50 weight percent based on the total weight of (A), (B) and (C).

4,284,755

N-SUBSTITUTED ASPARTIC ACID DERIVATIVES AS CURING AGENTS FOR EPOXIDE RESINS

Friedrich Lohse, Oberwil; Friedrich Stockinger, Hölstein, and Sameer H. Eldin, Birsfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

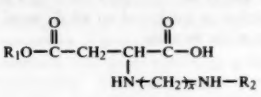
Filed Apr. 30, 1980, Ser. No. 145,076

Claims priority, application Switzerland, May 8, 1979, 4305/79

Int. Cl.³ C08G *59/52*

U.S. Cl. 528—111 **9 Claims**

1. An N-substituted aspartic acid monoester of the formula I



(I)

wherein R_1 is an alkyl group which has 1 to 12 C atoms and which optionally contains ether oxygen atoms, or it is a cyclohexyl, phenyl, tolyl or benzyl group, R_2 is an alkyl group having 3 or 4 C atoms, or it is a cyclohexyl, phenyl, tolyl or methoxyphenyl group, and x is the number 2 or 3.

4,284,756

POLYESTER COMPOSITIONS, SHAPED ARTICLES OBTAINED FROM THEM AND PROCESSES FOR PREPARING THEM

Patrick J. Horner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 29, 1979, Ser. No. 43,424

Claims priority, application United Kingdom, Jun. 9, 1978, 26606/78

Int. Cl.³ C08G *8/02, 63/42*

U.S. Cl. 528—128 **7 Claims**

1. A linear polyester which contains polymerized in its molecule polymerized units of bis(hydroxyalkoxy)xanth-9-ones, the amount of said bis(hydroxyalkoxy)xanth-9-ones being 0.05 to 10% by weight based on the total polymer.

4,284,757

THERMOTROPIC AROMATIC COPOLYESTERS AND PROCESSES FOR THEIR PREPARATION

Bernard Fayolle, Ecully, France, assignor to Rhone Poulenc Industries, Paris, France

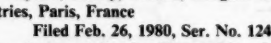
Filed Feb. 26, 1980, Ser. No. 124,855

Claims priority, application France, Mar. 2, 1979, 79 05920

Int. Cl.³ C08G *63/64*

U.S. Cl. 528—191 **10 Claims**

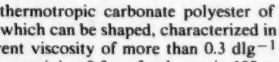
1. A thermotropic carbonate polyester of high molecular weight, which can be shaped, characterized in that it possesses an inherent viscosity of more than 0.3 dlg^{-1} (measured on a solution containing 0.5 g of polymer in 100 cm^3 of a 50/50 by volume mixture of para-chlorophenol and 1,2-dichloroethane) and a flow point which is above or equal to 150° C. and below 330° C., and in that it consists essentially of units of the formulae:



(I)

(II)

and



(III)

in which the radicals R, which are identical, each represent a para-phenylene radical which is monosubstituted by a methyl or ethyl group or a chlorine or bromine atom;

the radicals R_1 each represent an unsubstituted paraphenylene radical, with $0.3 \leqq a \leqq 1$, $0 \leqq b \leqq 0.7$ and $a+b=1$; and

the radicals R_2, which may be identical or different, each represent a radical chosen from amongst para-phenylene, 1,4-cyclohexylene, 4,4'-biphenylene, 2,6-naphthylene, 1,1'(4,4'-ethylenedioxydiphenylene), 1,1'-(4,4'-butylenedioxydiphenylene) and 1,1'-(4,4-hexylenedioxydiphenylene) groups,

the amount of the units (II) in the mixture (II)+(III) being between 30 and 90 mol % and the molar ratio of the units (I) to the sum of the units (II)+(III) being between 0.95 and 1.05.

4,284,758

GLYOXAL/CYCLIC UREA CONDENSATES

Bernard F. North, Rock Hill, S.C., assignor to Sun Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 92,630, Nov. 8, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,248

Int. Cl.³ C08G *4/00*

U.S. Cl. 528—245 **5 Claims**

1. The alkylated product of the reaction of approximately stoichiometric amounts of glyoxal and one or more cyclic ureas.

4,284,759

PREPARATION OF AMINOPLAST RESIN PARTICLES

Richard G. C. Henbest, and John Harrison, both of Norton, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 3, 1979, Ser. No. 35,643

Claims priority, application United Kingdom, May 31, 1978, 25658/78

Int. Cl.³ C08G *12/12*

U.S. Cl. 528—261 **9 Claims**

1. A process for the manufacture of particles suitable for use as pigments in paper making which comprises;

(A) reacting in an aqueous medium urea, formaldehyde and a source of inorganic oxyacid radicals selected from the group consisting of sulphite, phosphate, phosphite, and borate radicals, said source being present in such a quantity that ther are 0.2 to 15 moles, per 100 moles of formaldehyde, of said oxyacid radicals, to form an aqueous urea-formaldehyde resin solution;

(B) adding an aqueous acid to said resin solution, the amount of said acid being sufficient to cause said resin to gel in an extended form of a mass of high area particles lightly bonded together;

(C) drying the resultant gelled resin mass;

(D) curing said mass by heating at 100° C. to 200° C.; and

(E) comminuting said cured gelled resin mass to powder form.

4,284,760

PROCESS FOR THE MANUFACTURE OF UNSATURATED POLYESTER RESINS

William H. Millick, 3rd, Wilmington, N.C., and Norman R. Newburg, Wilmington, Del., assignors to Hercofina, Wilmington, N.C.

Filed Mar. 13, 1980, Ser. No. 129,939

Int. Cl.³ C08G *63/52*

U.S. Cl. 528—306 **5 Claims**

1. A process for producing styrene-soluble unsaturated polyester resins from DMT process residue having a methoxyl content within the range of 8 to 25%, which process comprises forming from said residue a hydroxyl-terminated ester product having a methoxyl content which is inversely related to the methoxyl content of said residue and is within the range defined by equations

$Y=3.0-0.10X$ and $Y=4.0+0.25X$

where Y is the methoxyl content of said ester product and X is the methoxyl content of said residue and is within the range of 8 to 25 by

(a) transesterifying said residue with an excess of at least one dihydric alcohol until the methoxyl content is within the above defined range, or

(b) transesterifying said residue with an excess of at least one dihydric alcohol until the methoxyl content is below the value defined by the equation $Y=3.0-0.10X$ and adding thereto a sufficient quantity of said residue to adjust the methoxyl content of the product to a value within the above defined range, and

reacting said ester product with an unsaturated dicarboxylic acid or its anhydride to form said unsaturated polyester resin.

4,284,761

THIODIETHANOL-BASED POLYURETHANE ELASTOMERS HAVING IMPROVED DYNAMIC PROPERTIES AND METHOD FOR PRODUCTION THEREOF

Volker D. Arendt, Princeton, and Tsi T. Li, Milltown, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.

Filed Jul. 23, 1980, Ser. No. 171,615

Int. Cl.³ C08G *65/08*

U.S. Cl. 528—373 **8 Claims**

1. A polyether-thioether copolymer glycol, represented by the formula:

$$H-OC_2H_4SC_2H_4]_x[OC_4H_8-]_yOH$$

wherein the mole ratio of x/y ranges from about 45:55 to about 60:40 respectively, prepared by a process which comprises: (a) condensing, at a temperature of about 160°–205° C., in the presence of an acidic condensation catalyst, 1,4-butanediol with sufficient thiodiethanol to produce a trimer, represented by the formula:

$$HO-C_4H_8-O-C_2H_4SC_2H_4-O-C_4H_8-OH$$

(b) completing the condensation, under the same conditions, by the incremental addition to said trimer, of the remaining thiodiethanol at a rate corresponding essentially to the rate of removal of water of reaction therefrom, such that no significant excess of thiodiethanol is present in the reaction mixture at any given time; (c) extracting the product of (b) with water, at a ratio of polymeric diol to water between about 2/1 and $\frac{1}{2}$; and (d) recovering the extracted copolymer glycol.

4,284,762

METHOD FOR INHIBITING CORROSION-CAUSING TENDENCY AND COLORATION OF HALOGEN-CONTAINING OLEFIN RESINS WITH HYDROTALCITE

Shigeo Miyata, Takamatsu, and Masataka Kuroda, Kagawa, both of Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,523

Claims priority, application Japan, Dec. 14, 1978, 53/153732

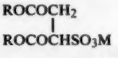
Int. Cl.³ C08F *6/00*

U.S. Cl. 528—485 **5 Claims**

1. In a method for inhibiting the corrosion-causing tendency and coloration of an olefin polymer or copolymer selected from the group consisting of polyethylene, polypropylene, poly(1-butene), poly(4-methyl-1-pentene), an ethylene-propylene copolymer and a copolymer of at least one alpha-olefin with a diene, said olefin polymer or copolymer containing a halogen component, by incorporating about 0.01 to about 5 parts by weight of a hydrotalcite in the halogen component-containing olefin polymer or copolymer, the improvement which comprises mixing the olefin polymer or copolymer, containing a halogen component attributed to a polymerization catalyst and/or to post-halogenation, with a hydrotalcite of the formula

$$Mg_{1-x}Al_x(OH)_2A_{x/n}{}^{n-}\cdot mH_2O$$

wherein $0<x\leqq 0.5$, m is a positive number, and A^{n-} represents an anion having a valence of n, or with a product resulting from the surface-coating of said hydrotalcite with an anionic surface-active agent selected from the group consisting of an alkali metal salt of a fatty acid of the formula RCOOM in which R is an alkyl group having 3 to 40 carbon atoms and M represents an alkali metal atom, an alkali metal salt of an alkylsulfate of the formula $ROSO_3M$ in which R and M are as defined above, an alkali metal salt of an alkylsulfonate of the formula RSO_3M in which R and M are as defined above, an alkali metal salt of an alkylarylsulfonate of the formula R-aryl-SO_3M in which R and M are as defined above and aryl represents phenyl, naphthyl or tolyl, and an alkali metal salt of a sulfosuccinic ester of the formula



in which R and M are as defined above, said hydrotalcite having

(i) a BET specific surface area of not more than 30 m^2/g, and

(ii) an average secondary particle size of not more than 3 microns.

4,284,763

SUGAR ACETALS, THEIR PREPARATION AND USE

Leslie A. W. Thelwall, Swindon; Leslie Hough, Wimbledon, and Anthony C. Richardson, Henley-on-Thames, all of England, assignors to Talres Development (N.A.) N.V., Curacao, Netherlands Antilles

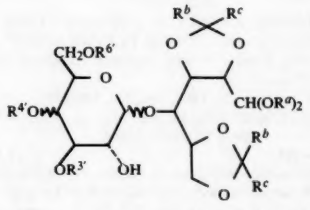
Filed Mar. 26, 1980, Ser. No. 133,975

Claims priority, application United Kingdom, Apr. 6, 1979, 12263/79

Int. Cl.³ C07H *5/02, 9/02*

U.S. Cl. 536—4 **10 Claims**

1. A sugar acetal of the general formula



(I)

wherein:

R^a is C_{1-3} alkyl, phenyl or benzyl;

R^b is hydrogen, C_{1-3} alkyl, phenyl or benzyl;

R^c is hydrogen, C_{1-3} alkyl, phenyl or benzyl;

$R^{3'}$, $R^{4'}$ and $R^{6'}$ are hydrogen atoms or one of $R^{3'}$ and $R^{6'}$ is a hydrogen atom and the other or $R^{3'}$ and $R^{6'}$ forms with $R^{4'}$ a group of formula

in which R^b and R^c are as defined.

4,284,764
PROCESS FOR THE PREPARATION OF 5-FLUORO-5-DEOXY AND 5-EPI-FLUORO-5-DEOXY-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS AND NOVEL 5-FLUORO-5-DEOXY AND 5-EPI-FLUORO-5-DEOXY DERIVATIVES PRODUCED THEREBY

Peter J. L. Daniels, Cedar Grove, and Dinanath Rane, Verona, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 893,638, Apr. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 792,825, May 2, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,097

Int. Cl.³ A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—10 **10 Claims**

6. A 5-fluoro-5-deoxy or 5-epi-fluoro-5-deoxy derivative of a 4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol wherein said 4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol is selected from the group consisting of gentamicin A, gentamicin B, gentamicin B_1, gentamicin C_{2a}, gentamicin C_{2b}, gentamicin X_2, verdamicin, tobramycin, Antibiotic G-418, Antibiotic 66-40B, Antibiotic 66-40D, Antibiotic JI-20A, Antibiotic JI-20B, Antibiotic G-52, kanamycin A, kanamycin B and 3',4'-dideoxykanamycin B;

and the 1-N-X derivatives thereof, wherein X is $—CH_2Y$ or

wherein Y is a member selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, aminohydroxyalkyl and alkylaminohydroxyalkyl, said Y having up to4 carbon atoms and when substituted by both amino and hydroxy groups, said groups are on different carbon atoms;

and the pharmaceutically acceptable acid addition salt thereof.

4,284,765
AUTOMATIC AGING ANALYZER USING A MOTOR HAVING A CONSTANT TORQUE

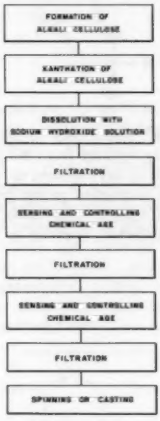
Charles J. Geyer, Jr., Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Inc., Berwyn, Pa.

Filed Dec. 11, 1979, Ser. No. 102,397

Int. Cl.³ C08B *9/04, 17/00*

U.S. Cl. 536—60 **4 Claims**

1. In a process for the manufacture of viscose products which includes the step of ripening a homogeneous viscose solution prior to spinning or casting, the improvement which comprises in the ripening stage the steps of operating a motor means having a constant torque in said viscose during ripening, said motor means having its speed influenced by the viscosity of said viscose solution, monitoring the change in speed of said motor resulting from the change in viscosity of said viscose solution during ripening, and then controlling the temperature of said viscose in response to said monitoring, so as to bring the viscose solution to the desired degree of ripeness whereby the resistance on said motor means changes as the viscose ripens because of the change in viscosity and the temperature is adjusted in response to said change in viscosity to heat or cool the viscose and thereby altering the rate of ripening.



4,284,766
PROCESS FOR THE PREPARATION OF CEPHALOSPORIN COMPOUNDS

Stuart B. Laing, Harrow, and Gordon G. Weingarten, London, both of England, assignors to Glaxo Group Limited, London, England

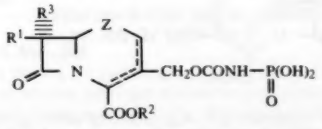
Filed Sep. 20, 1979, Ser. No. 77,757

Claims priority, application United Kingdom, Sep. 21, 1978, 37675/78

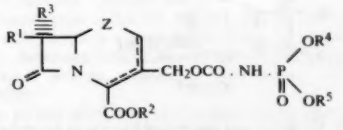
Int. Cl.³ C07D *501/04*

U.S. Cl. 544—22 **3 Claims**

1. In a process for the preparation of a compound of formula



wherein R^1 represents a C_1–C_{40} protected amino group, R^2 represents a group selected from the group consisting of hydrogen atoms and carboxyl blocking groups, R^3 represents a group selected from the group consisting of hydrogen atoms and C_1–C_8 alkyl, C_1–C_8 alkylthio and C_1–C_8 alkoxy groups; Z is >S or >S→O (α- or β-); and the dotted line bridging the 2-, 3- and 4-positions of the molecule indicates that the compounds may be ceph-2-em or ceph-3-em compounds, and salts thereof, the steps which consist of reacting a compound of formula



wherein R^1, R^2, R^3, Z and the dotted line are as herein defined, and R^4 and R^5, which may be the same or different, each represents a group selected from the group consisting of alkyl,

aralkyl, alicyclic or aryl groups, or R^4 and R^5 together form a divalent group with at least 3 carbon atoms bridging the oxygen atoms, with a compound of formula

(III)

wherein R^6, R^7 and R^8, which may be the same or different, each represents a group selected from the group consisting of alkyl, aralkyl, alicyclic or aryl groups, or any two of R^6, R^7 and R^8 together form a divalent group containing at least 3 carbon atoms; and X represents an atom selected from the group consisting of chlorine, bromine or iodine atoms, followed by hydrolysis.

4,284,767

PROCESS FOR PREPARING 3-CARBAMOYLOXYMETHYL CEPHALOSPORINS

David C. Humber, London; Stuart B. Laing, Harrow, and Gordon G. Weingarten, London, all of England, assignors to Glaxo Group Limited, London, England

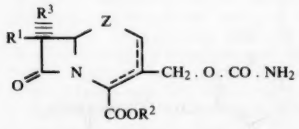
Continuation of Ser. No. 27,804, Apr. 6, 1979, abandoned. This application Jan. 15, 1980, Ser. No. 112,201

Claims priority, application United Kingdom, Apr. 7, 1978, 13799/78

Int. Cl.³ C07D *501/04*

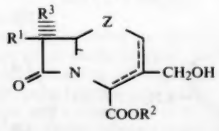
U.S. Cl. 544—22 **4 Claims**

1. In a process for the preparation of a 3-carbamoyloxymethyl cephalosporin of formula



(III)

(wherein R^1 represents a C_1–C_{40} protected amino group; R^2 represents a group selected from the group consisting of hydrogen atoms and carboxyl blocking groups; R^3 represents a group selected from the group consisting of hydrogen atoms and C_1–C_8 alkyl, C_1–C_8 alkylthio and C_1–C_8 alkoxy groups; Z is >S or >S→O (α- or β-); and the dotted line bridging the 2-, 3- and 4-positions of the molecule indicates that the compounds are ceph-2-em or ceph-3-em compounds) and, salts thereof, the steps which consist in contacting a 3-hydroxymethyl cephalosporin of formula



(II)

(wherein R^1, R^2, R^3, Z and the dotted line are as hereinbefore defined) with dichlorophosphinyl isocyanate and hydrolysing the resulting cephalosporin reaction product in at least one stage to the compound of formula (III).

4,284,768

1,2-DIHYDRO-4-AMINO-2-OXO-3-QUINOLINE-CARBOXYLIC ACID DERIVATIVES

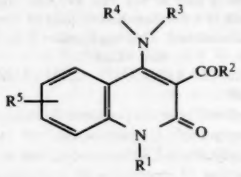
Arthur A. Santilli, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 166,273

Int. Cl.³ C07D *215/54, 413/04*

U.S. Cl. 544—128 **11 Claims**

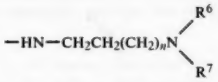
1. A compound of the formula:



in which

R^1 is hydrogen, alkyl of one to six carbon atoms, alkyl or propargyl;

R^2 is hydroxy, alkoxy of one to six carbon atoms, alkylamino of one to six carbon atoms, dialkylamine in which each alkyl group is of one to six carbon atoms or



wherein n is 0 or 1 and R^6 and R^7 are alkyl of one to three carbon atoms provided that when —COR^2 is an amide R^3 and R^4 are hydrogen;

R^3 and R^4 are, independently hydrogen or alkyl of one to six carbon atoms, and when taken together with the nitrogen atom to which they are attached, R^3 and R^4 form a 4-morpholinyl, 4-methyl-1-piperazinyl or 4-(2-hydroxyethyl)-1-piperazinyl substituent, and

R^5 is hydrogen, chlorine or bromine,

or a pharmaceutically acceptable salt thereof.

4,284,769

PREPARATION OF TRIAZINYL NITRILES

Willem J. Mijs, Rozendaal; Charles H. V. Dusseau, Heemstede, and Hermannus J. M. Sinnige, Apeldoorn, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 918,242, Jun. 23, 1978, abandoned, which is a division of Ser. No. 749,502, Dec. 10, 1976, Pat. No. 4,124,763. This application Aug. 1, 1979, Ser. No. 62,642

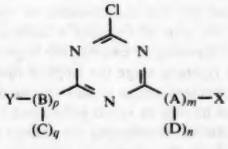
Claims priority, application Netherlands, Dec. 16, 1975, 7514613

Int. Cl.³ C07D *251/42, 251/48, 251/24, 251/38*

U.S. Cl. 544—180 **3 Claims**

1. A process for the preparation of novel radical initiators comprising

(a) contacting a solution of (i) a compound of the formula



wherein

(1) m, n, p, and q independently are 0 or 1, provided if m=0, then n=0; and if p=0, then q=0;

(2) the groups Y, B and C, X, A and D, or both are capable of forming a hetrocyclic ring having 2 to 5 carbon atoms;

(3) X, Y, C, and D are independently selected from the group consisting of substituted and unsubstituted alkyl groups having from 1 to about 20 carbon atoms, the substituted alkyl groups being substituted with a substituent selected from the group consisting of fluorine, chlorine, bromine, iodine, alkyl, aryl, alkoxy, alkylthio, carboxylester, cyano, hydroxyl, $—NH_2$, —COOH, and $—SO_3H$; alkenyl groups having from about 2 to about 20 carbon atoms, cycloalkyl groups having from 3 to 6 carbon atoms, and phenyl;

(4) if m=0, X may also be chlorine;

(5) if p=0, Y may also be chlorine;

(6) if m=1, X and D independently may also be hydrogen;

(7) if p=1, Y and C independently may also be hydrogen;

(8) if m=1, and n=1, A is nitrogen;

(9) if m=1 and n=0, A is one member selected from the group consisting of oxygen and sulfur;

(10) if p=1 and q=1, B is nitrogen;

(11) if p=1 and q=0, B is one member selected from the group consisting of oxygen and sulfur;

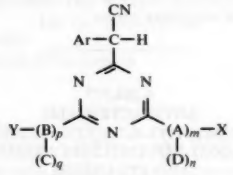
(12) and Ar is a substituted or unsubstituted aryl group having from 6 to 30 carbon atoms, the substituted aryl group being substituted with a substituent selected from the group consisting of alkyl having 1 to 4 carbon atoms, aryl, fluorine, chlorine, bromine, iodine, acyl, aroyl, carboxyl, alkoxy, aryloxy, amino, nitro, alkyl sulfonyl, aryl sulfonyl, alkyl sulfinyl, and aryl sulfinyl, with a compound of the formula $Ar—CH_2—CN$, a quaternary ammonium compound in a water immiscible, or practically water-immiscible organic solvent, and a solution of alkali in water;

(b) allowing the reaction to go to substantial completion;

(c) acidifying the reaction mixture;

(d) isolating the organic phase;

(e) washing the organic phase until neutral, to thus produce the compound



wherein the terms A, Ar, B, C, D, X, Y, m, n, p, and q have the meanings defined above;

(f) oxidatively coupling the foregoing compound; and

(g) isolating the novel radical initiator.

4,284,770

PROCESS FOR THE MANUFACTURE OF VAT DYES

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

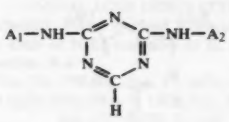
Filed May 7, 1979, Ser. No. 36,622

Claims priority, application Switzerland, May 17, 1978, 5342/78

Int. Cl.³ C07D *251/48, 401/12, 403/12, 413/12*

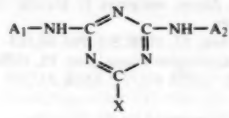
U.S. Cl. 544—187 **7 Claims**

1. A process for the manufacture of vat dyes of the formula



(1)

wherein each of A_1 and A_2 independently is an anthrapyrimidine, anthrapyridone, anthrapyrimidone, azabenzanthrone, benzanthrone, anthrone, anthrimide, anthrimidecarbazole, isothiazoleanthrone, pyrazole-anthrone, pyrimidanthrone, quinazolineanthraquinone, oxazole-anthraquinone, thiazole-anthraquinone, oxadiazole-anthraquinone, pyrazole-anthraquinone, pyrazino-anthraquinone, anthraquinone or phthaloylacridone radical which can carry as substituents halogen atoms, alkyl, alkoxy, aryl, aryloxy, aralkyl, aralko arylamino, alkylmercapto, arylmercapto, cyano, thiocyano, acyl, acylamino, carbalkoxy, sulfonamide and carboxyamide groups, which comprises reacting compounds of the formula



(2)

wherein X is halogen and A_1 and A_2 are as defined for formula (1), in a basic medium with hydrazine, hydrazine hydrate, methyl hydrazine, ethyl hydrazine, phenyl hydrazine, hydrazinium chloride, hydrazinium dichloride, hydrazinium sulfate, hydrazinium bromide or benzenesulfonyl hydrazide.

4,284,771

PROCESS FOR PREPARING MELAMINE

Hsuan L. Tien, Wayne, N.J., and Kenneth E. Olson, Riverside, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 8, 1980, Ser. No. 184,580

Int. Cl.³ C07D *251/56*

U.S. Cl. 544—200 **7 Claims**

1. A process for preparing melamine which consists essentially in: reacting cyanogen and ammonia at atmospheric pressure and at a temperature in the range from about 300° C. to about 600° C. in the presence of silica or alumina or silica-alumina and in the presence or absence of nitrogen.

4,284,772

MONOCHLORO-S-TRIAZINE DERIVATIVES

Gerrit Hoentjen, Westervoort; Stephanus A. G. de Graaf, Renkum; Albert H. Bijkerk, Rheden, and Cornelis R. H. I. de Jonge, De Steeg, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 818,371, Jul. 25, 1977, Pat. No. 4,204,060, which is a continuation of Ser. No. 651,086, Jan. 21, 1976, abandoned. This application May 9, 1979, Ser. No. 37,568

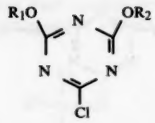
Claims priority, application Netherlands, Oct. 4, 1975, 7511696

The portion of the term of this patent subsequent to May 30, 1997, has been disclaimed.

Int. Cl.³ C07D *251/26*

U.S. Cl. 544—218 **9 Claims**

1. A compound of the formula



wherein R_1 and R_2 are independently a member of the group consisting of (1) alkyl having 10 to 20 carbon atoms; (2) alkyl having 10 to 20 carbon atoms substituted with a member selected from the group consisting of alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 8 carbon atoms, and aryl having from 6 to 9 carbon atoms; (3) alkenyl having 10 to 20 carbon atoms; and (4) furfuryl.

4,284,773

1,2,3,5-TETRAHYDROIMIDAZOTHIENOPYRIMIDIN-2-ONES

Fumiyoshi Ishikawa, and Shinichiro Ashida, both of Minamifunabori, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

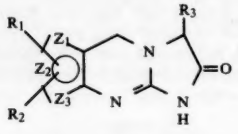
Filed Aug. 13, 1979, Ser. No. 66,113

Claims priority, application Japan, Aug. 11, 1978, 53-97832

Int. Cl.³ C07D *495/14;* **A61K** *31/505*

U.S. Cl. 544—247 **6 Claims**

1. A compound represented by the formula:



wherein one of Z_1,Z_2 and Z_3 is a sulfur atom and the remaining two of Z_1, Z_2 and Z_3 represent CH, R_1 and R_2 each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, a phenyl group, or a chlorine atom or, when Z_1 or Z_3 is a sulfur atom, R_1 and R_2 taken together can represent an alkylene chain of 3 to 5 carbon atoms, and R_3 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and a pharmaceutically acceptable acid addition salt thereof.

4,284,774

SULFOARYLATED NIGROSINE DYE AND USE IN JET-PRINTING INKS

Bennett G. Buell, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 7, 1979, Ser. No. 92,005

Int. Cl.³ C09B *57/00*

U.S. Cl. 544—348 **10 Claims**

1. Nigrosine base aryl monosulfonate containing at least about 0.5 aryl monosulfonate groups of the structure —Ar—SO_3A wherein Ar is aryl and A is hydrogen or alkali metal per effective formula weight of nigrosine base.

4,284,775

1,4-DIAZABICYCLOOCTANE DI-N,N'-QUATERNIZED COMPOUNDS

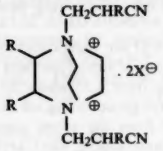
George H. Temme, North Haven, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 956,109, Oct. 30, 1978, Pat. No. 4,216,322. This application Feb. 4, 1980, Ser. No. 117,860

Int. Cl.³ C07D *471/08*

U.S. Cl. 544—351 **2 Claims**

1. A 1,4-diazabicyclooctane diammonium dihalide having the formula



wherein each R is independently selected from the group consisting of hydrogen, lower-alkyl, aryl, aralkyl, and cycloalkyl, and X is chlorine or bromine.

4,284,776

RADIATION CURABLE MICHAEL ADDITION AMINE ADDUCTS OF AMIDE ACRYLATE COMPOUNDS

Gerald W. Gruber, Sewickley; Charles B. Friedlander, Glenshaw; William H. McDonald, Arnold, and Rostyslaw Dowbenko, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

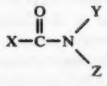
Filed Dec. 9, 1977, Ser. No. 858,973

Int. Cl.³ C07D *295/10, 211/08*

U.S. Cl. 544—400 **11 Claims**

1. Radiation polymerizable acrylyloxy-containing compound comprising Michael addition adduct of

(a) amide acrylate compound of the general formula



wherein X, Y and Z may each independently be hydrogen, alkyl, aryl, acrylyloxyalkyl, acrylyloxy aliphatic ester or acrylyloxy aliphatic ether, with the proviso that X, Y and Z together have at least two acrylyloxy groups, and

(b) a stoichiometrically deficient amount of at least one member selected from the group consisting of a primary amine and a secondary amine.

4,284,777

ANTIBACTERIALS: 1-DIFLUOROMETHYL-6,7-METHYLENEDIOXY-1,4-DIHYDRO-4-OXO-3-QUINOLINECARBOXYLIC ACID AND ITS ESTERS

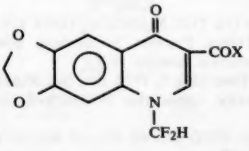
Kyu T. Lee, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 972,959, Dec. 26, 1978, Pat. No. 4,216,324, which is a division of Ser. No. 758,331, Jan. 14, 1977, Pat. No. 4,147,788, which is a continuation-in-part of Ser. No. 660,852, Feb. 23, 1976, abandoned. This application Feb. 14, 1980, Ser. No. 121,487

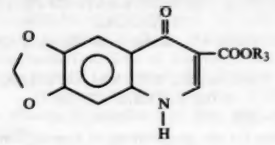
Int. Cl.³ C07D *491/14*

U.S. Cl. 546—90 **3 Claims**

1. A process for preparing a compound of the formula:



,wherein X=—OCH_3, —OCH_2H_5, —OC_3H_7 or —Cl, which comprises contacting a compound of the formula:



where

R_3=CH_3, C_2H_5, or C_3H_7; with the radical :CF_2 in an aprotic solvent; then optionally hydrolyzing in dilute acid and contacting with PCl_5.

4,284,778

NITROGEN-CONTAINING HETEROCYCLIC RING DERIVATIVES

Kazuo Kubo, Urawa; Noriki Ito, Iwatsuki; Isao Souzu, Urawa; Yasuo Isomura, Yokohama; Hiroshige Homma, Omiya, and Masuo Murakami, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 876,517, Feb. 9, 1978, Pat. No. 4,186,200, which is a continuation-in-part of Ser. No. 814,325, Jul. 11, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 68,172

Claims priority, application Japan, Jul. 22, 1976, 51/87486; Dec. 29, 1976, 51/158228; Mar. 31, 1977, 52/36384; Apr. 13, 1977, 52/42423; May 1, 1977, 52/464

Int. Cl.[3] **C07D** *498/04*

U.S. Cl. 546—115 **2 Claims**

1. 5-Oxo-7-phenyl-2,3-dihydro-5H-oxazolo[3,2-a]pyridine.

2. 6-Oxo-8-phenyl-3,4-dihydro-2H,6H-pyrido[2,1-b][1,3]oxazine.

4,284,779

AMINO ACID DERIVATIVES

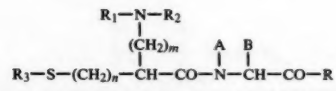
Miguel A. Ondetti, Princeton, and Michael E. Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 759,685, Jan. 17, 1977, Pat. No. 4,113,715. This application Oct. 31, 1977, Ser. No. 846,734

Int. Cl.[3] **C07D** *211/60*

U.S. Cl. 546—189 **10 Claims**

1. A compound of the formula



and salts thereof,

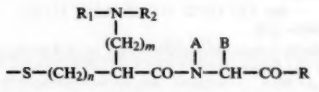
wherein

R is hydroxy or lower alkoxy

R_1 is hydrogen, lower alkanoyl or amino(imino)methyl;

R_2 is hydrogen, lower alkyl or phenyl-lower alkylene;

R_3 is hydrogen, lower alkanoyl, benzoyl or



A and B together form a $(CH_2)_p$ bridge which completes an unsubstituted ring of 6 atoms with the nitrogen and carbon to which they are joined or said ring substituted with a hydroxy group;

m is 1,2,3 or 4;

n is 0 or 1; and

p is 4.

4,284,780

AMINO ACID DERIVATIVES

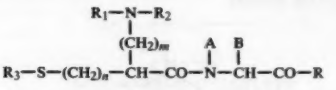
Miguel A. Ondetti, Princeton, and Michael E. Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 759,685, Jan. 17, 1977, Pat. No. 4,113,715. This application May 1, 1978, Ser. No. 901,372

Int. Cl.[3] **C07D** *211/60*

U.S. Cl. 546—189 **4 Claims**

1. A compound of the formula



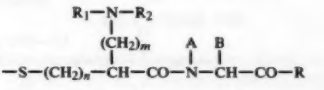
and salts thereof,

wherein R is hydroxy or lower alkoxy

R_1 is hydrogen, lower alkanoyl or amino(imino)methyl;

R_2 is hydrogen, lower alkyl or phenyllower alkylene;

R_3 is hydrogen, lower alkanoyl, benzoyl or



A and B together form a $(CH_2)_p$ bridge which completes an unsubstituted ring of 6 atoms with the nitrogen and carbon to which they are joined or said ring substituted with a hydroxy group;

m is 0;

n is 1; and

p is 4.

4,284,781

SUPPORTED VANADIA CATALYST AND USE THEREOF FOR NITRILE PRODUCTION

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 819,771, Jul. 28, 1977, Pat. No. 4,092,271, which is a continuation-in-part of Ser. No. 727,060, Sep. 27, 1976, abandoned. This application Mar. 2, 1978, Ser. No. 882,667

Int. Cl.[2] **C07D** *213/57*; **C07C** *120/14*

U.S. Cl. 546—286 **24 Claims**

1. In a process for producing a nitrile by the catalytic ammoxidation of a compound containing at least one alkyl group convertible to a nitrile group by reaction with ammonia in the presence or absence of gaseous oxygen, the improvement comprising:

effecting said ammoxidation with a catalyst comprising vanadia supported on a porous support in an amount to provide a vanadia to support weight ratio ranging from about 0.3:1 to about 3:1 substantially entirely within the pores of the support, said vanadia having been placed in molten form substantially within the pores of a support having a surface area greater than about 50 m^2 per gram, a porosity greater than about 0.4 cc per gram, said catalyst containing an alkali metal in an amount to provide a vanadia metal to alkali metal mole ratio of from 2:1 to 30:1.

4,284,782

PROCESS FOR THE MANUFACTURE OF 6-HYDROXYPYRID-2-ONES

Frank Schmidt, Bruchköbel, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

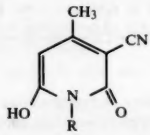
Filed Sep. 17, 1979, Ser. No. 76,237

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845863

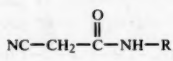
Int. Cl.³ C07D *239/22*

U.S. Cl. 546—288 **8 Claims**

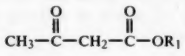
1. In the process for the manufacture of 6-hydroxypyrid-2-ones of the formula



wherein R is hydrogen or alkyl having 1 to 4 carbon atoms comprising reacting a cyanoacetamide of the formula



with an acetoacetic acid ester of the formula



wherein R_1 is selected from the group consisting of alkyl having 1 to 8 carbon atoms, alkenyl having 1 to 8 carbon atoms, cycloalkyl having 3 to 6 carbon atoms and cycloalkenyl having 3 to 6 carbon atoms, at elevated temperatures in an aqueous solution or suspension in the presence of a basic compound in a molar amount at least equal to that of said cyanoacetamide, the improvement comprises said basic compound being an amine of the formula RNH_2 with R being the identical to the pyridone nitrogen substituent, and the reaction is carried out at temperatures from 50° to 200° C. at superatmospheric pressure of 0.5 to 50 bars.

4,284,783

LIQUID PHASE PREPARATION OF 2-CHLORO-5-TRIFLUOROMETHYLPYRIDINE AND 2-CHLORO-5-PERCHLOROFLUOROMETHYLPYRIDINE

Graham Whittaker, and Anne O'Brien, both of Frodsham, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 95,679, Nov. 19, 1979, Pat. No. 4,257,857. This application Sep. 25, 1980, Ser. No. 190,629

Claims priority, application United Kingdom, Jan. 22, 1979, 2196/79

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 **12 Claims**

1. A process for the selective preparation of 2-chloro-5-trifluoromethylpyridine or a 2-chloro-5-perchlorofluoromethylpyridine which comprises chlorinating 3-trifluoromethylpyridine or a 3-perchlorofluoromethylpyridine respectively in the liquid phase by contacting the 3-trifluoromethylpyridine or a 3-perchlorofluoromethylpyridine respectively with chlorine in the presence of a peroxy or azonitrile free-radical initiator which is effective for said chlorination and recovering the desired product from the reaction mixture.

4,284,784

PROCESS FOR THE PREPARATION OF 4-METHYL THIAZOLE

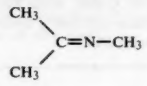
Sa V. Ho, St. Louis, Mo., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 22, 1980, Ser. No. 152,282

Int. Cl.³ C07D *277/20*

U.S. Cl. 548—202 **16 Claims**

1. A process for the preparation of 4-methylthiazole which comprises reacting an imine having the formula:



with sulfur dioxide in the presence of a catalyst consisting of a mixture of oxides of iron and one or two of the oxides of metals selected from alkaline earth metals, transition metals, and the Group IIIa and IVa metals of the periodic table.

4,284,785

SUBSTITUTED PHENYL ESTERS OF ISOXAZOLECARBOXYLIC ACIDS

John W. Hanifin, Jr., Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 19, 1979, Ser. No. 105,168

Int. Cl.³ C07D *261/12;* **A61K** *31/42*

U.S. Cl. 548—248 **34 Claims**

1. 5-Methyl-4-isoxazolecarboxylic acid, o-methoxyphenyl ester.

24. 5-Methyl-4-isoxazolecarboxylic acid, m-bromophenyl ester.

4,284,786

5-METHYLISOXAZOLE-4-CARBOXYLIC-(4-TRIFLUOROMETHYL)-ANILIDE

Friedrich-Johannes Kämmerer, Hochheim am Main, and Rudolf Schleyerbach, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 13, 1979, Ser. No. 103,551

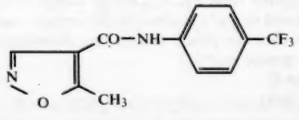
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854439

Int. Cl.³ C07D *261/12;* **A61K** *31/42*

U.S. Cl. 548—248 **1 Claim**

1. 5-Methylisoxazole-4-carboxylic acid-4-trifluoromethylanilide of the formula

(i)



4,284,787

PROCESS FOR THE PREPARATION OF 1,2,3-TRIAZOLES SUBSTITUTED IN THE 2-POSITION

Hans Knupfer, and Carl-Wolfgang Schellhammer, both of Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

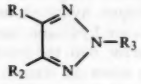
Filed Apr. 11, 1979, Ser. No. 29,049

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815956

Int. Cl.[3] **C07D** *209/04, 209/06, 401/04, 405/04*

U.S. Cl. 548—256 **4 Claims**

1. A process for the preparation of a compound of the formula



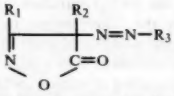
wherein

R_1 and R_2 each independently is C_1–C_{18}-alkyl; C_1–C_{18}-alkyl substituted by —OH, halogen, amino, C_1–C_4-alkoxy, cyano, carboxyl, carbalkoxy, carbamoyl; alkylsulphonyl or arylsulphonyl or sulphamoyl; cyclohexyl; cyclopentyl; vinyl; allyl; propenyl; phenyl; phenyl substituted by halogen, alkyl, alkoxy, nitro, cyano, phenyl, carboxyl, sulpho, carbalkoxy, carbamoyl, sulphamoyl, sulphonic acid esters, alkylcarbonyl or arylcarbonyl; naphthyl; pyridyl; thienyl; or benzyl radicals or phenylethyl radicals, or

R_1 and R_2, together with the triazole ring carbon atoms to which they are bonded, can also form 5-membered or 6-membered carbocyclic ring, and

R_3 is phenyl; naphthyl; pyridyl or coumarin-7-yl optionally substituted by phenyl, by naphthyl, by alkoxycarbonyl or by 1,2,4-triazol-1-yl, 1,2,3-triazol-1-yl or 1,2,3-triazol-2-yl, it being possible for the triazolyl radicals to carry 5-alkyl-, aryl- and aralkylsubstituents, it also being possible for the radicals in the 4-position and 5-position to form, together, the remaining members of a fused-on benzene ring or naphthalene ring; pyrazolyl; pyrazolyl substituted by halogen, alkyl, aryl and aralkyl; thien-2-yl; carbostyril-7-yl; 2-styrylbenztriazol-5-yl; 5-phenyl-1,2,4-thiadiazolyl; 2-methyl or styryl-benzoxazol-5-yl or -6-yl and 2-methyl or styryl-benzthiazol-5-yl or -6-yl,

comprising contacting a compound of the formula



with a basic compound at a temperature between about 20° and 150° C.

4,284,788

IMIDAZOLIDONE INTERMEDIATES OF BIOTIN

Kraft Hohenlohe-Oehringen, Innsbruck, Austria, and Anton Fliri, Cambridge, Mass., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

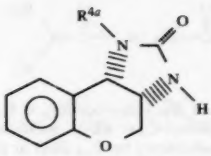
Filed Mar. 31, 1980, Ser. No. 135,796

Claims priority, application Switzerland, Apr. 6, 1979, 3293/79

Int. Cl.[3] **C07D** *491/052, 491/044*

U.S. Cl. 548—303 **11 Claims**

1. A compound of the formula:



Ia

wherein R^{4a} is azidosulphonyl.

4,284,789

THIO-INDIGO DYESTUFFS

Ernst Spietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 959,446, Nov. 13, 1978, Pat. No. 4,229,583, which is a continuation-in-part of Ser. No. 655,102, Feb. 4, 1976, abandoned. This application May 9, 1980, Ser. No. 148,218

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1975, 2504935

Int. Cl.[3] **C09B** *7/00*

U.S. Cl. 549—52 **2 Claims**

1. A thioindigo dyestuff prepared by oxidizing, at a temperature of −20° to +50° C., a 3-hydroxy-thionaphthene or benzothionaphthene with an aqueous alkaline solution of an ammonium or alkali metal peroxo-disulfate.

4,284,790

3-HYDROXYBENZYL COMPOUNDS USEFUL AS ANTIOXIDANTS

Hans Hinsken, Lörrach, Fed. Rep. of Germany; Horst Mayerhoefer, Oberwil, and Wolfgang Mueller, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

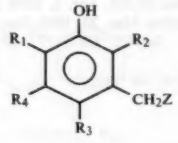
Filed Jan. 23, 1979, Ser. No. 5,758

Claims priority, application Switzerland, Jan. 27, 1978, 926/78; Feb. 2, 1978, 1137/78

Int. Cl.[3] **C07C** *149/40, 149/41;* **C08K** *5/13, 5/37*

U.S. Cl. 560—15 **6 Claims**

1. A compound of the formula



wherein

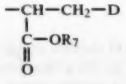
R_1 is $C_{1\text{-}18}$ alkyl, $C_{5\text{-}8}$ cycloalkyl, $C_{1\text{-}5}$ alkyl-$C_{5\text{-}8}$ cycloalkyl having an aggregate of carbon atoms not exceeding 10, or unsubstituted phenyl, and

R_4 is hydrogen or $C_{1\text{-}4}$ alkyl; or

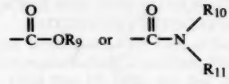
R_1 and R_4 together form $—CH_2CH_2CH_2CH_2—$; each of

R_2 and R_3, independently, is $C_{1\text{-}4}$ alkyl or cyclohexyl, with the proviso that both R_2 and R_3 cannot be cyclohexyl; and

Z is a group $—XR_5$ where X is oxygen or sulphur, and R_5 is a group



where D is



each of R_7 and R_9, independently, is C_{1-18} alkyl, C_{5-8} cycloalkyl, phenyl-C_{1-4} alkyl, unsubstituted phenyl, phenyl monosubstituted by C_{1-4} alkyl or phenyl disubstituted by C_{1-4} alkyl, R_{10} is hydrogen, C_{1-18} alkyl, C_{5-8} cycloalkyl, benzyl, unsubstituted phenyl, phenyl monosubstituted by C_{1-4} alkyl or phenyl disubstituted by C_{1-4} alkyl, and R_{11} is C_{1-8} alkyl or phenyl.

4,284,791

COMBATING FUNGI WITH N-CHLOROACETYL-N-(2,6-DI-SUBSTITUTED PHENYL)-ALANINE ESTERS

Winfried Lunkenheimer, Wuppertal; Wilhelm Brandes, and Peter Kraus, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

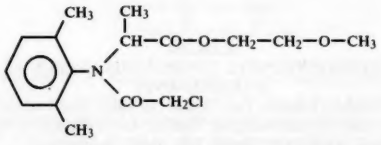
Filed Oct. 5, 1977, Ser. No. 839,716

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648074

Int. Cl.[3] **C07C** *101/44;* **A61K** *31/215*

U.S. Cl. 560—43 **1 Claim**

1. N-chloroacetyl-N-(2,6-dimethylphenyl)-alanine 2-methoxyethyl ester of the formula



(1)

4,284,792

19-HYDROXY-19-METHYL-INTER-PHENYLENE-PG$_1$ COMPOUNDS

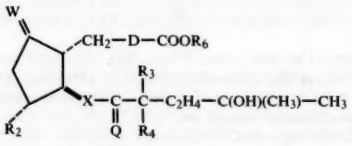
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 24, 1980, Ser. No. 133,200

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 560—55 **2 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)—O—CH_2—,

wherein —(m—Ph)— is inter-meta-phenylene, and

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p—Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and

wherein X is cis- or trans—CH=CH— or —C≡C—.

4,284,793

METHOD FOR PRODUCING PLASTICIZERS

Fumio Sagara; Hiroshi Kawabata, and Kiyonori Shiiba, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 924,728, Jul. 14, 1978, abandoned. This application Mar. 25, 1980, Ser. No. 133,863

Claims priority, application Japan, Nov. 30, 1977, 52/143368

Int. Cl.[3] **C07C** *67/48, 67/08*

U.S. Cl. 560—78 **5 Claims**

1. In a method for producing dialkyl phthalate plasticizer by esterification in the presence of a tetraalkyl titanate, followed by treatment of the resulting ester with adsorbent(s) and filtration,

the improvement which comprises:

(1) reacting phthalic anhydride with an alkanol having 4–18 carbon atoms at a temperature of 150° C.–250° C., for 3–6 hours, in the presence of a tetraalkyl titanate or its polymer to obtain a dialkyl phthalate having an acid value of 0.1 or lower and distilling off the remaining unreacted alkanol from the resulting phthalate at a high temperature and under a reduced pressure;

(2) subjecting the dialkyl phthalate obtained from the step (1), without the conventional treatment of blowing steam into said dialkyl phthalate after said distilling off, to a contact treatment with a solid alkali selected from the group consisting of sodium carbonate, sodium bicarbonate, calcium carbonate, barium carbonate, sodium hydroxide and potassium hydroxide, in the absence of water, at a temperature of 100° C. to 200° C.;

(3) treating the resulting liquid obtained in said contact treatment, with adsorbent(s); and

(4) separating the dialkyl phthalate from the resulting material by filtration.

4,284,794

PROSTAGLANDIN DERIVATIVES

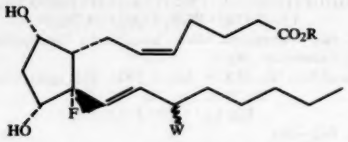
Paul A. Grieco, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 16, 1976, Ser. No. 750,956

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 560—121 **12 Claims**

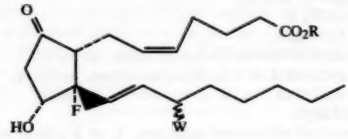
1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof wherein R is H or CH_3 and W is

or

7. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof wherein R is H or CH_3 and W is

or

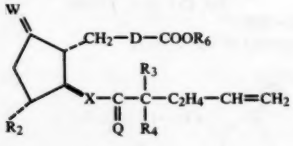
4,284,795

19,20-DIDEHYDRO-PG$_2$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

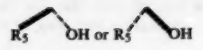
Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611.
This application Oct. 17, 1979, Ser. No. 85,620
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **3 Claims**

1. A compound of the formula



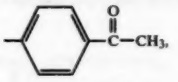
wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2,
(3) cis—CH_2—CH=CH—CH_2—CH_2—,
(4) trans—$(CH_2)_3$—CH=CH—,
wherein g is zero, one, 2, or 3;

wherein Q is

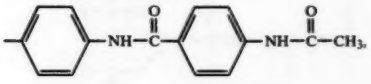


wherein R_5 is hydrogen or methyl,
wherein R_6 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;

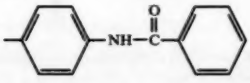
(g)



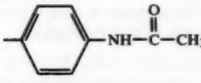
(h)



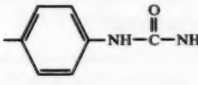
(i)



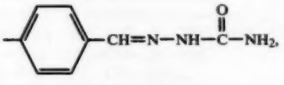
(j)



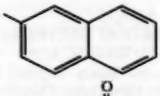
(k)



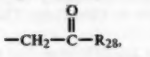
(l)



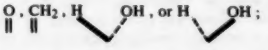
(m)



(n)



wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is



and wherein X is cis— or trans—CH=CH— or —C≡C—.

4,284,796

PREPARATION OF 4-ACYLOXY-2-METHYL-CROTONALDEHYDES

Rolf Fischer, Heidelberg, and Hans-Martin Weitz, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

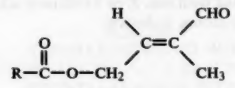
Filed Sep. 25, 1979, Ser. No. 78,722

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844949

Int. Cl.[3] C07C *67/29, 67/297, 69/025, 69/145, 69/24*

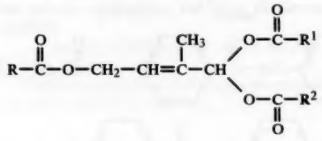
U.S. Cl. 560—262 5 Claims

1. A process for the preparation of a 4-acyloxy-2-methyl-crotonaldehyde of the formula



I

where R is hydrogen or an aliphatic radical of 1 to 5 carbon atoms, wherein a 1,1,4-triacyloxy-2-methyl-but-2-ene of the formula



II

where R, R^1 and R^2 are each hydrogen or an aliphatic radical of 1 to 5 carbon atoms, is reacted with water at a temperature of from 0°-200° C. in the presence of from 0.1 to 50 moles per mole of II of a carboxylic acid of the formula

R-COOH III

where R has the above meanings.

4,284,797

PROCESS FOR SEPARATING MIXTURES OF 3- AND 4-NITROPHTHALIC ACID

Peter Furrer, Bottmingen, and Harry Beyeler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 31, 1979, Ser. No. 44,122

Claims priority, application Switzerland, Jun. 5, 1978, 6135/78

Int. Cl.[3] C07C *79/46*

U.S. Cl. 562—434 9 Claims

1. A process for separating mixtures of 3- and 4-nitrophthalic acid, which process comprises treating a mixture of 3- and 4-nitrophthalic acid, which mixture is free from inorganic acid residues, in an aqueous-organic medium containing 1–20 percent by volume of water, at a temperature of between 20° and 100° C., stepwise with a base capable of forming salts of 3- and 4-nitrophthalic acid, which salts are essentially insoluble in the reaction medium, the treatment being carried out by adding base until a pH value of about 2.8 is obtained, separating the precipitating product consisting mainly of a 3-nitrophthalic acid mono-salt, subsequently precipitating, by the addition of further base, a product consisting principally of a 4-nitrophthalic acid salt, and finally converting the resulting nitrophthalic acid salts separately into the corresponding free acids.

4,284,798

13,14-DIDEHYDRO-INTER-OXA-11-HYDROXYMETHYL-19-OXO-PGF$_1$ COMPOUNDS

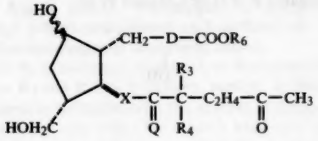
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,031

Int. Cl.[3] C07C *177/00*

U.S. Cl. 562—503 4 Claims

1. A compound of the formula



wherein D is

(1) $(CH_2)_3$—O—CH_2—,

(2) $(CH_2)_2$—O—$(CH_2)_2$—, or

(3) —CH_2—O—$(CH_2)_3$—;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH_3,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,

(i) —(p-Ph)—NH—CO—(p-Ph),

(j) —(p-Ph)—NH—CO—CH_3,

(k) —(p-Ph)—NH—CO—NH_2,

(l) —(p-Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is —C≡C—.

4,284,799

13,14-DIHYDRO-19-OXO-PGF$_2$ ANALOGS

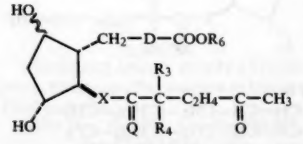
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,984

Int. Cl.[3] C07C *177/00*

U.S. Cl. 562—503 4 Claims

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(2) cis—CH_2—CH=CH—CH_2—CH_2—, or
(3) trans—$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

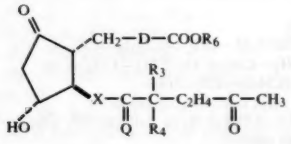
4,284,800

13,14-DIHYDRO-19-OXO-PGE$_1$ ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,063
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
$(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

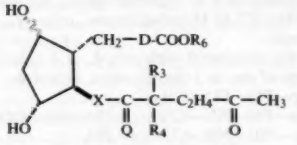
4,284,801

13,14-DIHYDRO-19-OXO-PGF$_1$ ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,062
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is $(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

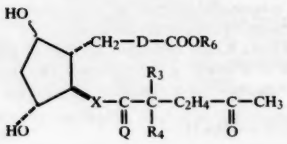
4,284,802

13,14-DIHYDRO-INTER-OXA-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,732
Int. Cl.[3] **C07C** *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein
D is
(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_2—O—(CH_2)CH_2—$, or
(3) $—CH_2—O—(CH_2)_3—$,
wherein
Q is a α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein
R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—PH)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2$-CO-R_{28},
wherein
(p-Ph) is para-phenyl or inter-para-phenylene,
wherein
R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidopheny, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is $—CH_2CH_2—$.

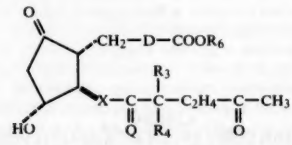
4,284,803

13,14-DIHYDRO-INTER-OXA-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,731
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_2—O—(CH_2)CH_2—$, or
(3) $—CH_2—O—(CH_2)_3—$,
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is $—CH_2CH_2—$.

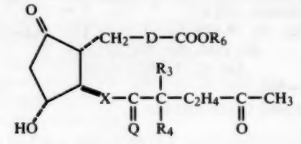
4,284,804

13,14-DIHYDRO-19-OXO-PGE$_2$ ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,985
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(2) cis—CH_2—CH=CH—CH_2—CH_2—, or
(3) trans—$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is $-CH_2CH_2-$.

4,284,805

13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

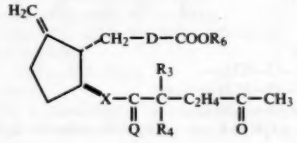
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,957

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) $(CH_2)_3-O-CH_2-$,

(2) $(CH_2)_2-O-(CH_2)_2-$, or

(3) $-CH_2-O-(CH_2)_3-$;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) $-CH_2-CO-R_{28}$,

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is $-C\equiv C-$.

4,284,806

13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGE$_1$ COMPOUNDS

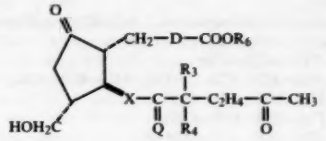
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,953

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) $(CH_2)_3-O-CH_2-$,

(2) $(CH_2)_2-O-(CH_2)_2-$, or

(3) $-CH_2-O-(CH_2)_3-$;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH_3,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,

(i) —(p-Ph)—NH—CO—(p-Ph),

(j) —(p-Ph)—NH—CO—CH_3,

(k) —(p-Ph)—NH—CO—NH_2,

(l) —(p-Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) $-CH_2-CO-R_{28}$,

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is $-C\equiv C-$.

4,284,807

13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-11-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

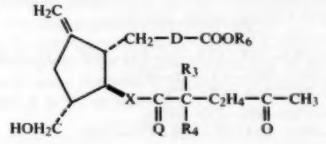
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,954

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) $(CH_2)_3-O-CH_2-$,

(2) $(CH_2)_2-O-(CH_2)_2-$, or

(3) $-CH_2-O-(CH_2)_3-$;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-PH)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

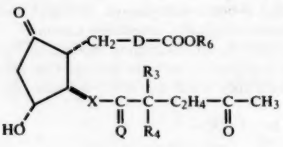
4,284,808

13,14-DIDEHYDRO-INTER-OXA-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,579, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,033
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_2$—O—$(CH_2)_2$—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

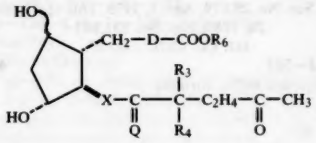
4,284,809

13,14-DIDEHYDRO-INTER-OXA-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,034
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_2$—O—$(CH_2)_2$—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

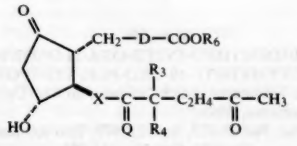
4,284,810

19-OXO-PGE$_1$ ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,045
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula

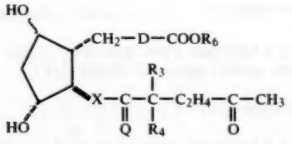


wherein
D is
$(CH_2)_3$—$(CH_2)_g$—CF_2—;

wherein
g is zero, one, two, or three;
wherein
Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein
R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO-(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein
(p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

4,284,811
19-OXO-PGF_2 ANALOGS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,218
Int. Cl.[3] C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

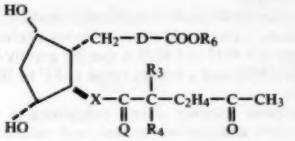
1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(2) cis—CH_2—CH=CH—CH_2—CH_2—, or
(3) trans—$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is cis-or trans—CH=CH—.

4,284,812
19-OXO-PGF_1 ANALOGS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,365
Int. Cl.[3] C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

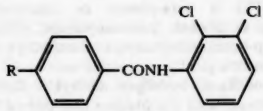
1. A compound of the formula



wherein D is
$(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein
g is zero, one, two, or three;
wherein
Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

4,284,813
BENZAMIDE DERIVATIVES AND HERBICIDAL COMPOSITION CONTAINING THE SAME
Tetsuo Takematsu, and Masaaki Hoya, both of Utsunomiya, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1979, Ser. No. 94,848
Claims priority, application Japan, Dec. 5, 1978, 53-149633
Int. Cl.[3] C07C *103/22, 103/28*
U.S. Cl. 564—168 **1 Claim**

1. Benzamide derivatives having the formula



wherein R represents a straight or branched chain alkyl group, having 1 to 8 carbon atoms, a straight or branched chain alkoxy group having 1 to 12 carbon atoms; or an amino group.

4,284,814

PROPENE TRIMER AND PROPENE TETRAMER AND USE THEREOF IN PERFUMERY

Robert S. De Simone, Middletown, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 941,101, Sep. 8, 1978, Pat. No. 4,219,450. This application Dec. 3, 1979, Ser. No. 99,699

Int. Cl.³ C07C *131/00*

U.S. Cl. 564—253 **2 Claims**

1. A propene trimer oxime comprising a mixture of branched chain nonanone oximes, said mixture having a refractive index (N_D^{20}) range of 1.4417 to 1.4578, a specific gravity (D_{20}) range of 0.8735 to 0.8929 and a boiling range of 53° to 70° C. at 1 to 0.8 mm. Hg.

2. A propene tetramer oxime comprising a mixture of branched chain dodecanone oximes, said mixture having a refractive index (N_D^{20}) range of 1.4595 to 1.4620, a specific gravity (D_{20}) range of 0.8764 to 0.8841 and a boiling range of 86° to 104° C. at 0.07 to 0.1 mm. Hg.

4,284,815

TUNGSTEN CATALYZED ANILINE-FORMALDEHYDE CONDENSATION

Edward T. Marquis; Lewis W. Watts, Jr., and Robert M. Gipson, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,474

Int. Cl.³ C07C *85/18*

U.S. Cl. 564—332 **3 Claims**

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a tungsten boride or sulfide catalyst.

4,284,816

METHOD OF PREPARING POLYAMINOPOLYPHENYLMETHANES

Edward T. Marquis, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 17, 1980, Ser. No. 188,162

Int. Cl.³ C07C *85/18*

U.S. Cl. 564—332 **3 Claims**

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a tungsten silicide catalyst.

4,284,817

PROCESS FOR PREPARING THIOPHENOLS

Kyung S. Shim, Irvington, and Adam E. Skrzec, West Nyack, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 2, 1977, Ser. No. 802,682

Int. Cl.³ C07C *149/28*

U.S. Cl. 568—67 **12 Claims**

1. A process for producing thiophenol which comprises reacting benzene with at least a stoichiometric amount of hydrogen sulfide in contact with an absorptive catalyst having a large surface area.

4,284,818

PROCESS FOR PREPARING HEXAMETHYLTETRAHYDRONAPHTHALENES

Hiroshi Sato; Koiti Fujisawa, both of Toyonaka; Hideto Tojima, Kyoto, and Seimei Yasui, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 12, 1979, Ser. No. 19,587

Claims priority, application Japan, Mar. 30, 1978, 53/37602

Int. Cl.³ C07C *2/68, 45/46*

U.S. Cl. 568—323 **18 Claims**

1. A process for producing 1,1,3,4,4,6-hexamethyl-1,2,3,4-tetrahydronaphthalene, which comprises reaction between p-cymene and a 2,3-dimethylbutene in an aliphatic hydrocarbon or cyclohexane solvent using a catalytic amount of anhydrous aluminum halide of the formula,

$$AlX_1X_2X_3$$

wherein X_1, X_2 and X_3 are the same or different, and are halogen atoms, provided that X_1, X_2 and X_3 may not be all fluorine atoms, in the presence of secondary alkyl halides of formula (I),

(I)

wherein R^1 and R^2 are each an alkyl group or may form a cyclic ring, and X is a halogen atom; tertiary alkyl halides of formula (II),

(II)

wherein R^1, R^2 and R^3 are each an alkyl group or two of them may form a cyclic ring, and X is a halogen atom; propargyl halides of formula (III),

$$RC{\equiv}C{-}CH_2{-}X \quad \text{(III)}$$

wherein R is a hydrogen atom or an alkyl group, and X is a halogen atom; or allyl halides of formula (IV),

$$R{-}CH{=}CH{-}CH_2{-}X \quad \text{(IV)}$$

wherein R is a hydrogen atom or an alkyl group and X is a halogen atom.

4,284,819

ACETYL HYDRINDACENES, ACETYL INDANES, MIXTURES OF SAME, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

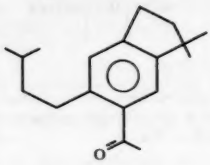
Mark A. Sprecker, Sea Bright; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 953,180, Oct. 20, 1978, Pat. No. 4,209,543. This application Jun. 5, 1980, Ser. No. 156,772

Int. Cl.³ C07C *49/792*

U.S. Cl. 568—327 **2 Claims**

1. 6-Acetyl-5-(3-methylbutyl)-1,1-dimethylindane having the structure:



existing in the liquid phase at ambient temperature and pressure.

4,284,820

3,6,6-TRIMETHYLBICYCLO[3.1.0]HEXANE DERIVATIVES AS PYRETHROD INTERMEDIATES

Johannes L. M. Syrier, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 23, 1980, Ser. No. 189,982

Claims priority, application United Kingdom, Sep. 28, 1979, 33836/79

Int. Cl.³ C07C *49/443*

U.S. Cl. 568—374 **2 Claims**

1. 3,6,6-Trimethyl-3-hydroxybicyclo[3.1.0]hexan-4-one.

4,284,821

DICHLOROVINYLCYCLOBUTANONES, PROCESSES FOR PREPARING THEM, AND THEIR USE AS INTERMEDIATES FOR PRODUCING PESTICIDAL COMPOSITIONS

Pierre Martin, Rheinfelden, and Daniel Bellus, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

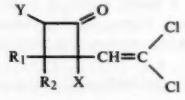
Filed Nov. 20, 1978, Ser. No. 962,516

Claims priority, application Switzerland, Nov. 24, 1977, 14406/77; Oct. 26, 1978, 11076/78

Int. Cl.³ C07C *49/533, 53/48*

U.S. Cl. 568—381 **3 Claims**

1. A compound of the formula I



(I)

wherein

one of R_1 and R_2 is methyl and the other is hydrogen or methyl, or

R_1 and R_2 together are alkylene having 2–4 C atoms,

X is chlorine and Y is hydrogen, or

X is hydrogen and Y is chlorine.

4,284,822

PROCESS FOR PREPARING HEXAFLUOROACETONE

Takashi Tohzuka, Settsu, and Yohnosuke Ohsaka, Takatsuki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 28, 1980, Ser. No. 135,164

Claims priority, application Japan, Mar. 31, 1979, 54-38694

Int. Cl.³ C07C *45/32*

U.S. Cl. 568—399 **3 Claims**

1. A process for preparing hexafluoroacetone which comprises reacting hexafluoropropene with oxygen in the presence of a metal oxide selected from the group consisting of tin oxides, iron oxides and indium oxides.

4,284,823

PROCESS FOR PREPARING 3-(3,5-DI-TERT.ALKYL-4-HYDROXY-PHENYL)-2,2-DI-SUBSTITUTED PROPIONALDEHYDES

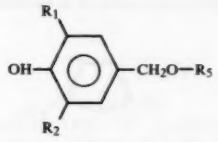
Richard H. Kline, Silver Lake, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 15, 1979, Ser. No. 84,490

Int. Cl.³ C07C *45/61*

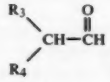
U.S. Cl. 568—433 **7 Claims**

1. A process comprising reacting a compound having the general structural Formula II:



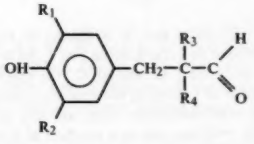
II

with a compound having the general Formula III:



III

in the presence of a catalyst selected from the group consisting of alkali metal hydroxides and alkali metal alkoxides while dissolved in an organic solvent selected from the group consisting of aliphatic alcohols, aliphatic ethers and aliphatic nitriles to yield an aldehyde having the structural Formula I:



I

wherein R_1 and R_2 are the same or different radicals selected from the group consisting of tertiary alkyl radicals having from 4 to 12 carbon atoms, R_3 and R_4 are the same or different radicals selected from the group consisting of alkyl radicals containing from 1 to 12 carbon atoms, cycloalkyl radicals containing from 5 to 12 carbon atoms and phenyl radicals or R_3 and R_4 with the carbon atoms to which they are joined may form a cycloalkyl ring of from 5 to 12 carbon atoms, R_5 is selected from the group consisting of hydrogen, alkyl radicals containing from 1 to 12 carbon atoms, or a cycloalkyl radical containing 5 to 6 carbon atoms.

4,284,824

METHYL SUBSTITUTED NORBORANE CARBOXALDEHYDES

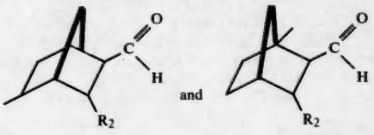
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 22, 1980, Ser. No. 152,187

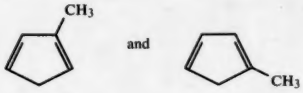
Int. Cl.³ C07C *47/347, 47/445*

U.S. Cl. 568—445 **1 Claim**

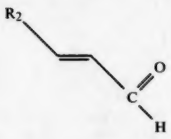
1. A product which is a mixture of methyl substituted norborane carboxaldehyde having the structures:



produced according to the process consisting of the steps of (i) intimately admixing a mixture of methyl cyclopentadienes having the structures:



with and alpha, beta unsaturated aldehyde defined according to the structure:



where R_2 is methyl or hydrogen in the presence of a catalyst having the structure:

$$R_m'AlX_n$$

wherein R' is C_1–C_3 alkyl and X is chloro or bromo with m+n=3 and m being 1 or 2 and n being 1 or 2; the temperature of reaction being between 0° C. and 50° C.; the reaction taking place in the presence of a solvent; the reaction taking place in the presence of a triethanolamine promoter and (ii) reacting hydrogen with the resulting reaction product at a pressure of between 25 psig and 100 psig and at a temperature of between about 15° C. and about 50° C. in the presence of a catalyst selected from the group consisting of Raney Nickel and supported palladium.

4,284,825

4-SUBSTITUTED BENZALDEHYDE-DIALKYLACETAL

Dieter Degner, Dannstadt-Schauernheim; Manfred Barl, Otterstadt, and Hardo Siegel, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,952

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848397

Int. Cl.[3] **C07C** *43/307*

U.S. Cl. 568—592 **1 Claim**

1. 4-Benzyloxybenzaldehyde-dimethylacetal.

4,284,826

POLYETHER POLYOLS

David Aelony, Beersheva, Israel, assignor to Makhteshim Chemical Works Ltd., Beersheva, Israel

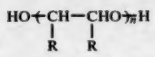
Filed Nov. 16, 1979, Ser. No. 94,879

Claims priority, application Israel, Nov. 19, 1978, 55989

Int. Cl.[3] **C07C** *43/13*

U.S. Cl. 568—614 **3 Claims**

1. A low molecular weight, low viscosity liquid diol oligomer of 4,4,4-trichloro-1,2-epoxybutane of the formula



wherein

R and R' are selected from hydrogen and $—CH_2CCl_3$, wherein R and R' are different, and wherein

n is an integer from 2 to 4.

4,284,827

PROCESS TO PREPARE METALATED OLEFINS

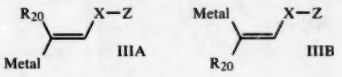
Jerry A. Walker, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 19,509, Mar. 12, 1979, abandoned. This application Dec. 17, 1979, Ser. No. 104,611

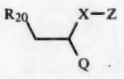
Int. Cl.[3] **C07C** *41/18, 41/24*

U.S. Cl. 568—686 **26 Claims**

1. A process for the preparation of compounds of the formulas:

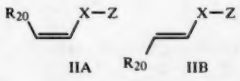


where R_{20} is a fluorine or chlorine atom or a $—NR_\alpha R_\beta$ group where R_α and R_β are the same or different and are alkyl of 1 thru 3 carbon atoms; where X is an oxygen or sulfur atom; where Z is alkyl of 1 thru 6 carbon atoms, phenyl or p-methylphenyl where the ratio of trans (IIIB) to cis (IIIA) isomers is greater than 70:30, which comprises reacting a compound of the formula:



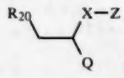
where Q is a chlorine, bromine or iodine or iodine atom or a trimethylamino group with at least 1.5 equivalents of a compound of the formula R-Metal where R is alkyl of 1 thru 5 carbon atoms or phenyl; where metal is lithium, sodium, or potassium, in a dry organic solvent in a temperature range of −15° to −120°.

13. A process for the preparation of compounds of the formulas:



where the ratio of trans (IIB) to cis (IIA) isomers is greater than 70:30 which comprises

(1) reacting a compound of the formula:



with at least 1 equivalent of a compound of the formula R-Metal in a dry organic solvent in a temperature range of −15° to −120° and

(2) quenching with a proton source so that the pH of the reaction mixture does not become less than 6, where R_{20}, X, Z, Q, Metal and R are defined in claim **1**.

4,284,828

PROCESS FOR THE MANUFACTURE OF 4,5-DICHLORO-2-(4-CHLOROPHENOXY)PHENOL

Claus D. Weis, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,814
Claims priority, application Switzerland, Nov. 21, 1978, 11919/78
Int. Cl.[3] C07C *41/22*
U.S. Cl. 568—637 10 Claims

1. A process for the manufacture of 4,5-dichloro-2-(4-chlorophenoxy)phenol, which comprises selectively chlorinating one molar equivalent of 2-phenoxyanisole at a temperature between −10° and +50° C., in a lower halogenated aliphatic hydrocarbon which contains at least one hydrogen atom, a lower aliphatic nitrile, dimethyl formamide, dimethylmethanephosphonate or methanol, with about 3 to 5 molar equivalents of chlorine, and demethylating the 4,5-dichloro-2-(4-chlorophenoxy)anisole obtained as intermediate with an acid.

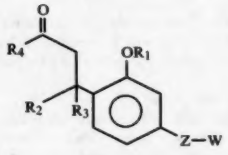
4,284,829

HYDROXYALKYL AND OXOALKYL SUBSTITUTED PHENOLS AS ANALGESICS AND SEDATIVES

Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 832,868, Sep. 13, 1977. This application Dec. 22, 1978, Ser. No. 972,595
Int. Cl.[3] C07C *39/06, 39/10, 47/00*
U.S. Cl. 568—764 4 Claims

1. A compound having the formula



wherein

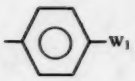
R_1 is selected from the group consisting of hydrogen, benzyl, alkanoyl having from one to five carbon atoms, —P(O)$(OH)_2$ and the sodium and potassium salts thereof, —$CO(CH_2)_2COOH$ and the sodium and potassium salts thereof, and —CO—$(CH_2)_p$—NR_5R_6 wherein p is 0 or an integer from 1 to 4; each of R_5 and R_6 when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_5 and R_6 when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

each of R_2 and R_4 is selected from the group consisting of hydrogen, alkyl having from one to six carbon atoms, phenyl, pyridyl and phenylalkyl having from one to four carbon atoms in the alkyl moiety;

R_3 is selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of (a) alkylene having from one to thirteen carbon atoms; (b) —$(alk_1)_m$—O—$(alk_2)_n$—wherein each of (alk_1) and (alk_2) is alkylene having from one to thirteen carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than thirteen; each of m and n is 0 or 1; and

W is selected from the group consisting of hydrogen, pyridyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro;

and the pharmaceutically acceptable acid addition salts of those compounds wherein R_1 is —CO—$(CH_2)_p$—NR_5R_6 and/or R_2, R_4 or W is pyridyl;

and the hemiketals of those compounds wherein R_1 is hydrogen.

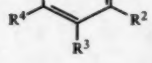
4,284,830

MONOHALOGENATION OF SUBSTITUTED PHENOL

Ronald D. Knudsen, and Darryl R. Fahey, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Feb. 1, 1980, Ser. No. 117,747
Int. Cl.[3] C07C *39/26, 39/28*
U.S. Cl. 568—779 6 Claims

1. A process for producing a mono-halogenated hydrocarbyl substituted phenol which comprises reacting a hydrocarbyl substituted phenol having the formula



wherein R^1, R^2, R^3, R^4, and R^5 are hydrogen, alkyl, cycloalkyl, or aryl radicals having 1 to 10 carbon atoms with the further provision that at least one of the radicals R^1 to R^5 is a hydrocarbyl radical, wherein at least one of the radicals, R has to be hydrogen,

with a halogen selected from the group consisting of chlorine, bromine and iodine in the presence of a non-polar diluent selected from the group consisting of benzene, mono-, di- and trialkyl substituted benzenes having 7 to 10 carbon atoms and halosubstituted hydrocarbons having 1 to 3 carbon atoms and 1 to 3 halogen atoms selected from the group consisting of chlorine and/or bromine the mole ratio of halogen to phenol being in the range of 0.5:1 to 1.5:1, and

separating the monohalohydrocarbyl phenol from the reaction mixture obtained in the reaction step.

4,284,831

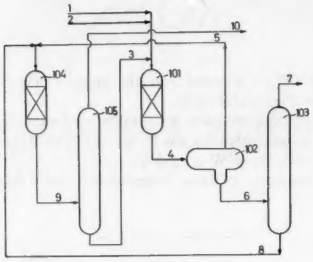
PROCESS FOR THE PRODUCTION OF TERTIARY ALCOHOLS

Yoshiharu Okumura, Kawagoe, and Katsumi Kaneko, Ooi, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1980, Ser. No. 146,443
Claims priority, application Japan, Jun. 26, 1979, 54-79671
Int. Cl.[3] C07C *29/04*
U.S. Cl. 568—899 10 Claims

3. In a process for the production of tertiary alcohols by causing an isoolefin or a hydrocarbon mixture containing an isoolefin to react with water in the presence of an acidic cation exchange resin, the improvement which comprises carrying out the reaction in the presence of an oxy acid selected from the group consisting of oxyacetic acid, lactic acid, 3-oxypro-

pionic acid, β, β, β-trichlorolactic acid, oxypivalic acid and γ-oxybutyric acid.



7. The process as set forth in claims 3, 4 or 5 in which the resin used is a sulfonated resin.

4,284,832

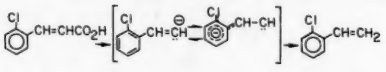
CONVERSION OF CS (TEAR GAS) TO O-CHLOROSTYRENE AND AMMONIUM SULFATE

Solim S. W. Kwak, Orem, Utah, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 28, 1980, Ser. No. 144,130

Int. Cl.³ C07C *25/00*

U.S. Cl. 570—190 **7 Claims**



1. Method for converting O-Chlorobenzalmalononitrile to O-Chlorostyrene, which comprises subjecting the O-Chlorobenzalmalononitrile to hydrolysis to produce O-Chlorocinnamic acid and subjecting the O-Chlorocinnamic acid to decarboxylation to produce O-Chlorostyrene.

4,284,833

CATALYST REGENERATION

Robert J. Blake, Oakland, and Guy W. Roy, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 697,086, Jun. 16, 1976, abandoned, which is a continuation of Ser. No. 439,455, Feb. 4, 1974, abandoned, which is a continuation of Ser. No. 116,593, Feb. 18, 1971, abandoned, which is a division of Ser. No. 785,389, Dec. 19, 1968, abandoned. This application Dec. 19, 1977, Ser. No. 862,242

Int. Cl.³ C07C *17/152*

U.S. Cl. 570—224 **4 Claims**

1. In a process for the oxychlorination of hydrocarbons in an oxychlorination reaction zone, containing a copper catalyst bed, maintained in a fluidized state at a temperature between about 350° and about 550° C. and a pressure between about zero and about 200 psig wherein a gaseous mixture is fed to said zone, said mixture comprising a hydrocarbon having from 1 to 4 carbon atoms, a chlorinating agent selected from the group consisting of hydrogen chloride, chlorine, or a chlorine-hydrogen chloride mixture, an oxygen-containing gas, said mixture containing less than 1000 ppm of sulfur in the form of sulfur containing compounds such as H_2S, SO_2 and SO_3 which progressively deactivate the catalyst, the improvement which comprises: maintaining the catalyst bed in a fluidized condition while discontinuing the flow of oxygen-containing gas and maintaining the oxychlorination reaction zone at a temperature between about 400° and about 525° C. for a period of time sufficient to remove deposited sulfur material whereby reactivation said catalyst.

4,284,834

DIETHYNYL AROMATIC HYDROCARBONS WHICH HOMOPOLYMERIZE AND CHAR EFFICIENTLY AFTER CURE

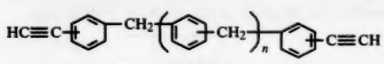
William B. Austin, Gardena, and Norman Bilow, Encino, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1979, Ser. No. 106,621

Int. Cl.³ C07C *15/16*

U.S. Cl. 585—25 **7 Claims**

1. Compounds having melting points of less than 150° C. which homopolymerize at temperatures below 200° C. and char efficiently whose structural formulas are:



wherein n may range from 0 to 4.

4,284,835

HYDROGENATION PROCESS

Leo Kim, Modesto, Calif.; Timm E. Paxson, Houston, and Sunny C. Tang, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 54,775, Jul. 5, 1979, which is a division of Ser. No. 861,916, Dec. 19, 1977, Pat. No. 4,179,403. This application Feb. 25, 1980, Ser. No. 124,157

Int. Cl.³ C07C *5/02, 5/03*

U.S. Cl. 585—277 **10 Claims**

1. A process for hydrogenating unsaturated hydrocarbons which comprises treating said material with hydrogen at hydrogenation conditions in the presence of a catalyst comprising:

(a) an ion exchange resin;

(b) a metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium and platinum; and

(c) an organic linking compound which has at least one moiety which is ionically bonded to said ion exchange resin and further has at least one moiety which is coordinately bonded to said metal.

4,284,836

PROCESS FOR THE MANUFACTURE OF REACTION PRODUCTS OF CONJUGATED DIOLEFINS AND AROMATIC HYDROCARBONS

Karl Hahn, and Uwe Biethan, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,909

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848804

Int. Cl.³ C07C *15/46*

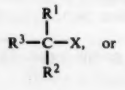
U.S. Cl. 585—438 **9 Claims**

1. A process for preparing an alkenyl derivative of an aromatic hydrocarbon by contacting a conjugated diolefin and the aromatic hydrocarbon with a catalyst consisting essentially of:

(a) a nickel compound which is soluble in the aromatic hydrocarbon;

(b) an organo-aluminum halide; and

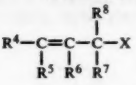
(c) a modifying agent wherein the modifying agent (c) is a compound of the formulae



or

1

-continued



II

wherein

X in each case is chlorine, bromine or iodine; and

R^1 to R^8 independently are each a straight chain or branched, saturated or unsaturated, aliphatic or cycloaliphatic hydrocarbon radical of 1–20 carbon atoms, optionally substituted by 1–41 halogen atoms, or

a hydrocarbon aryl radical of 6–14 carbon atoms, optionally substituted by

(a) 1–5 straight-chain or branched, saturated or unsaturated, aliphatic or cycloaliphatic hydrocarbon radicals, each of 1–10 carbon atoms, optionally substituted by halogen atoms, or

(b) 1–9 halogen atoms,

and wherein, R^4 to R^8 can alternatively be hydrogen, and R^1 and R^2 can also be hydrogen when R^3 is optionally substituted hydrocarbon aryl as defined above

or (c) is a chloro-, bromo- or iodo-tricyclo-[5.2.1.$0^{2,6}$]-decane or an 8(9)-chloro-, -bromo- or -iodo-8,9-dihydro-tricyclo-[5.2.1.$0^{2,6}$]-dec-3-ene.

4,284,837

PROCESS FOR RECOVERY OF AN ALIPHATIC DIOL OLIGOMERIZATION SOLVENT

Eugene F. Lutz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 29, 1980, Ser. No. 144,805

Int. Cl.[3] **C07C** *2/02*

U.S. Cl. 585—523 **8 Claims**

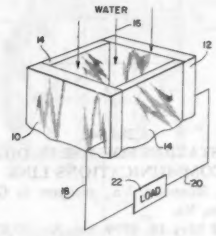
1. In the process for the recovery of an aliphatic diol reaction solvent in the processing scheme wherein ethylene is oligomerized at elevated temperature and pressure by contact with a solution of a nickel complex catalyst in an aliphatic diol solvent to afford a reaction product made up of (a) a liquid solvent phase containing dissolved catalyst, (b) a liquid hydrocarbon phase comprising ethylene oligomers containing dissolved ethylene, catalyst and diol solvent and (c) gaseous ethylene, said reaction product being passed to a series of phase separation zones whereby gaseous ethylene and a substantial portion of the diol reaction solvent containing dissolved catalyst are separated and recycled to the oligomerization reaction zone with a minor portion of the separated catalyst-containing reaction solvent being passed to a fractionation zone for removal of light ends and spent catalyst, prior to its recycle to the oligomerization process; the improvement which comprises, contacting the catalyst-containing, diol reaction solvent in the fractionation zone with a minor amount of an alkali metal hydroxide thereby minimizing the formation of oxygenated degradation products from the diol solvent during fractionation.

4,284,838

THERMOELECTRIC CONVERTER AND METHOD

Robert B. Indech, 46 Roger Williams Green, Providence, R.I. 02904

Filed Jun. 7, 1979, Ser. No. 46,269
Int. Cl.[3] H07L *37/00;* **H01L** *35/00*
U.S. Cl. 136—202 **11 Claims**



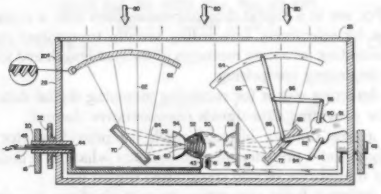
1. A thermoelectric converter comprising a pair of dissimilar metal members in spaced relation, a separating material filling the space between said members, said material being a flowing fluid heat conductive and electrically conductive, and means for applying a thermal gradient through said members and said material to generate usable electric power.

4,284,839

INTERNAL REFRACTOR FOCUSING SOLAR ENERGY COLLECTOR APPARATUS AND METHOD

Steven A. Johnson, 136 N. 1st West, Preston, Id. 83263

Filed Dec. 18, 1978, Ser. No. 970,673
Int. Cl.[3] H01L *31/04;* **F24J** *3/02*
U.S. Cl. 136—246 **18 Claims**



1. A solar collector comprising:
a shell structure, the shell structure having an open top;
first mounting means for the shell structure for rotating the shell structure about an axis to orient the open top of the shell structure toward the sun;
solar energy absorber means inside the shell structure and mounted coaxially with the axis;
second mounting means for supporting the solar energy absorber means inside the shell structure in a nonrotatable position relative to the sun to thereby accomodate rotational movement of the shell structure about the solar energy absorber means, the second mounting means comprising a first hollow shaft and a second shaft, the shell structure being rotatably mounted on the first hollow shaft and the second shaft, the second mounting means further comprising a bridge structure extending between the first hollow shaft and the second shaft, the bridge structure supporting the solar energy absorber means; and
focusing means in the shell structure for focusing solar energy toward the solar energy absorber means and focusing the solar energy coaxially on the solar energy absorber means, said focusing means comprising a Fresnel lens means inside the shell structure and mounted to focus solar energy on a mirror means, the mirror means reflecting the solar energy toward the solar energy absorber means.

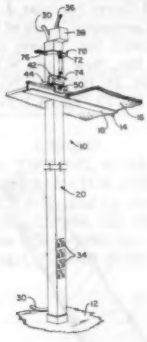
10. A solar collector comprising:
a shell structure, the shell structure having an open top;
first mounting means for the shell structure for rotating the shell structure about an axis to orient the open top of the shell structure toward the sun;
solar energy absorber means inside the shell structure;
second mounting means for supporting the solar energy absorber means inside the shell structure in a nonrotatable position relative to the sun to thereby accommodate rotational movement of the shell structure about the solar energy absorber means, the second mounting means including a hollow axle; and
focusing means in the shell structure for focusing solar energy toward the solar energy absorber means, the focusing means comprising a Fresnel lens means and a mirror, the Fresnel lens means focusing solar flux on the mirror and the mirror reflecting the focused solar flux toward the solar energy absorber means, the Fresnel lens means further comprising support means for moveably supporting the Fresnel lens means inside said shell structure to accommodate movement of the Fresnel lens means in tracking relationship to the sun, the support structure further comprising support means for supporting said mirror relative to said Fresnel lens means to accommodate reflecting solar energy to said solar energy absorber means.

4,284,840

SERVICE POLE ASSEMBLY

Charles T. Baker, West Hartford, Conn., assignor to The Wiremold Company, West Hartford, Conn.

Continuation of Ser. No. 806,770, Jun. 15, 1977, abandoned.
This application Oct. 15, 1979, Ser. No. 84,890
Int. Cl.[3] H02G *3/04*
U.S. Cl. 174—48 **7 Claims**

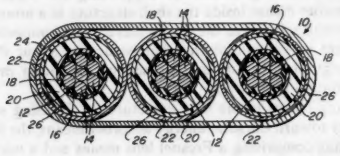


1. For installation in a room including a floor and ceiling suspension members relatively movable toward and away from the floor, a service pole assembly comprising an elongated hollow pole of sufficient length to extend from the floor above a ceiling suspension member, a pole hanger attachable in fixed relation to the ceiling suspension member, and a connector between the hanger and the pole, the connector including a first bracket attached to the hanger and supported for free sliding movement on the pole and a second bracket fixed to the pole above the hanger, and spring means connected between the hanger and the second bracket for urging the pole into floor bottoming engagement, the connector cooperating with the hanger in maintaining the pole in an upright position and providing for relative movement of the hanger longitudinally along the pole upon corresponding relative movement of the ceiling suspension member and the floor toward and away from each other.

4,284,841
CABLE

Donatas Tijunelis, Buffalo Grove, Ill.; Clinton A. Boyd, Tulsa, and Joseph E. Vandevier, Broken Arrow, both of Okla., assignors to Centrilift, Inc., Tulsa, Okla.

Filed Sep. 7, 1979, Ser. No. 73,414
Int. Cl.³ H01B 7/22
U.S. Cl. 174—103 **9 Claims**



1. In a multiple conductor cable especially suitable for high temperature use, the combination of each conductor comprising:

a plurality of strands comprising copper;

a resilient material surrounding each conductor and filling any voids between the strands thereof;

a high electric resistivity plastic covering said resilient material;

a lead jacket surrounding said high electric resistivity plastic;

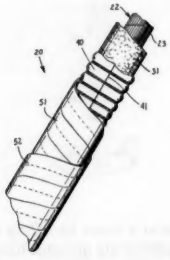
an oil resistant insulation material surrounding said lead jacket;

a braid layer tightly covering said insulation material; and an external armor surrounding said braid layer.

4,284,842
CABLE HAVING SUPERIOR RESISTANCE TO FLAME SPREAD AND SMOKE EVOLUTION

Candido J. Arroyo, Lilburn; Nicholas J. Cogelia, Duluth, and Ralph J. Darsey, Lawrenceville, all of Ga., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J. and Western Electric Company, Inc., New York, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,788
Int. Cl.³ H01B 7/34
U.S. Cl. 174—107 **15 Claims**



1. A cable which resists flame spread and smoke evolution, said cable comprising:

a core which includes an insulated conductor;

a layer which encloses the core and which comprises an inorganic, cellular material;

a metallic barrier which encloses said cellular layer and which comprises a strip having longitudinal edge portions formed into a seam, said metallic barrier having an outwardly facing surface which has a relatively low emissivity; and

an outer cover of a flame retardant material which encloses said metallic barrier and which comprises:

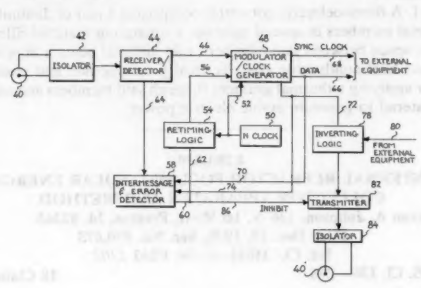
a first tape comprising a thermosetting material having at least translucent optical clarity and having a relatively low thermal diffusivity, said first tape wrapped about the barrier with an overlapped sealed seam; and

a second tape comprising a thermosetting material having at least translucent optical clarity and having a relatively low thermal diffusivity, said second tape wrapped about said first tape with an overlapped sealed seam.

4,284,843
REPEATING STATION FOR USE IN DIGITAL DATA COMMUNICATIONS LINK

Emery A. White, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed May 10, 1979, Ser. No. 37,834
Int. Cl.³ H04L 25/02
U.S. Cl. 178—69 G **17 Claims**



1. For use in a digital data communication link, a repeating station for selectively forwarding serially transmitted digital data including incoming messages of defined length and identifiable beginning comprising:

(a) detecting means for receiving incoming digital data and for providing data signals representative thereof;

(b) a free running internal clock for providing clocking signals at a predetermined frequency which in a multiple of the bit rate of said transmitted digital data;

(c) retiming logic responsive to said clocking signals for generating timing signals;

(d) modulating means substantially instantaneously responsive to said data signals and said timing signals to reconstruct the incoming digital data in a time relationship governed by said clocking means to thereby provide reconstructed digital data signals; and,

(e) transmitting means for transmitting said reconstructed digital data signals on said data communication link.

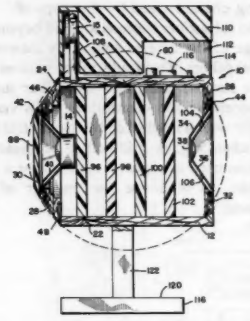
4,284,844
LOUDSPEAKER SYSTEM

David E. Belles, Pittsford, N.Y., assignor to Belles Research Corp., East Rochester, N.Y.

Filed May 7, 1979, Ser. No. 36,613
Int. Cl.³ H04R 1/26, 1/28
U.S. Cl. 179—1 E **21 Claims**

1. A loudspeaker system comprising a generally cubic enclosure having front and rear ends, openings in said ends, a loudspeaker mounted in said front end opening to radiate outwardly from said enclosure, and said front end being a gener-

ally square baffle, each edge of which is inwardly tapered toward said front end opening, the intersections of said tapered



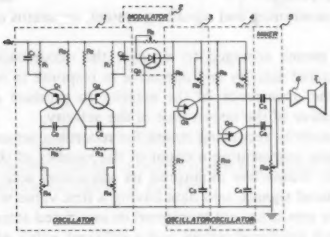
edges defining points along the outline of an imaginary spherical surface which substantially surrounds said enclosure.

4,284,845

PEST ELIMINATOR

Claude A. Belcher, 4456 Arch, San Diego, Calif. 92116

Filed Jul. 30, 1979, Ser. No. 61,597
Int. Cl.³ G08B *3/00*
U.S. Cl. 179—1 R **5 Claims**



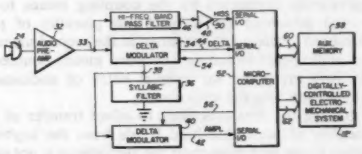
1. A pest repelling apparatus which comprises;
means for simultaneously emitting at least first and second audio signals;
means for simultaneously and periodically shifting the frequency of each of said first and second signals from a base frequency to a lower frequency and vice versa;
wherein said means for simultaneously emitting comprises:
a first oscillator;
a second oscillator;
a power amplifier having its input terminal AC coupled to the outputs of said first and second oscillators; and
a loud speaker driven by the output signal of the amplifier;
said means for simultaneously and periodically shifting frequencies comprise:
a resistive load in series with the supply line of said first and second oscillators; and
means for periodically shunting said resistive load.

4,284,846

SYSTEM AND METHOD FOR SOUND RECOGNITION

John Marley, 8715 E. Mackenzie Dr., Scottsdale, Ariz. 85251

Continuation-in-part of Ser. No. 903,697, May 8, 1978, Pat. No. 4,181,813. This application Aug. 1, 1979, Ser. No. 62,759
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SE **10 Claims**



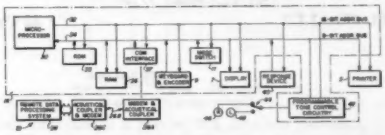
1. A method for producing a signal representing a characteristic sound contained in a stream of sound signals, said method comprising the steps of:
(a) producing a first sequence of analog signals representing said sound signals;
(b) operating upon said first sequence of analog signals to detect portions of said analog signals undergoing major slope changes and producing a sequence of digital pulses, the edges of said digital pulses corresponding in time to the beginnings and ends of said portions of said analog signals;
(c) operating upon said sequence of digital pulses to detect major slope transistions of said analog signals;
(d) measuring time intervals between predermined ones of said detected major slope transitions;
(e) computing a plurality of waveform characteristic ratios between predetermined ones of said time intervals;
(f) comparing said waveform characteristic ratios with a plurality of stored characteristic ratios to determine if said waveform characteristic ratios match any of said stored characteristic ratios; and
(g) producing a signal representing a sound corresponding to a matching one of said characteristic ratios.

4,284,847

AUDIOMETRIC TESTING, ANALYZING, AND RECORDING APPARATUS AND METHOD

Richard Besserman, 4824 E. Crystal La., Scottsdale, Ariz. 85253

Continuation of Ser. No. 920,684, Jun. 30, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,818
Int. Cl.³ H04R *29/00*
U.S. Cl. 179—1 N **23 Claims**



1. A method for audiometric testing of a first person by utilizing an audiometer located at the site of audiometric testing of the first person, the audiometer including
(i) a first processor,
(ii) a first memory included in the first processor,
(iii) coupling means for optionally operatively coupling, at the option of an operator, the audiometer to a second processor, the second processor being a remote processor including a second memory capable of storing a plurality of prior threshold levels previously obtained by past audiomeric testing of the first person, said audiometer being operable, with no modification thereto, to effect said audiometric testing with or without being operatively

coupled to the second processor, said coupling means including mode selection means for enabling the operator to select either a mode of operation of said audiometer wherein said audiometer is operatively coupled to a second processor or a mode of operation wherein said audiometer is not operatively coupled to the second processor,

(iv) a printer coupled to the first processor, said method comprising the steps of:

(a) manually entering said plurality of prior threshold levels into the audiometer, if the audiometer is not operatively connected by the coupling means to the second processor (of if) and said plurality of prior threshold levels is not contained in the second memory, the audiometer including keyboard means coupled to the first processor for manual entry of audiometric information into the audiometer;

(b) utilizing the first processor to effect transfer of said plurality of prior threshold levels from the keyboard means to the first memory if the audiometer is not operatively coupled to the second processor;

(c) utilizing the first processor to access the second processor via the coupling means to request the second processor to fetch said plurality of prior threshold levels from the second memory if the audiometer is coupled by the coupling means to the second processor;

(d) utilizing the second processor to fetch said plurality of prior threshold levels from the second memory and to transmit the plurality of prior threshold levels to the first processor via the coupling means in response to said request and then operatively decoupling the second processor from the audiometer;

(e) utilizing the first processor to digitally control selection of test tone frequencies and test tone intensities in accordance with a theshold bracketing subroutine stored in the first memory for execution by the first processor to determine a plurality of present threshold levels of the first person at the selected test tone frequencies, respectively;

(f) utilizing the first processor to temporarily store said plurality of present threshold levels;

(g) utilizing the first processor to compute a threshold shift which has occurred in the first person since said previous audiometric testing; and

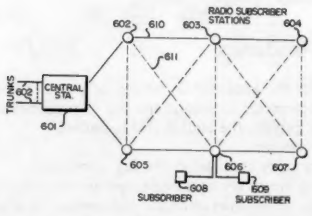
(h) utilizing the first processor to effect printing of information indicative of whether said threshold shift is significant.

4,284,848

SWITCHED NETWORK TELEPHONE SUBSCRIBER DISTRIBUTION SYSTEM

Edward G. Frost, 12000 Old Georgetown Rd., Rockville, Md. 20852

Filed Aug. 1, 1979, Ser. No. 62,785
Int. Cl.³ H04B 7/14
U.S. Cl. 179—2 EB **32 Claims**



21. The method of servicing telephone subscribers, which are not physically connected into a primary telephone system, by means of a network having a central station and plural spaced subscriber stations, the central station serving to provide access to the primary telephone system for the network subscribers, the spaced subscriber stations each serving to provide access to the network for at least one subscriber by transmitting and receiving calls intended for that subscriber, said method being characterized by the steps of:

relaying calls to subscriber stations located beyond the transmission range of the central station by means of at least one of several others of said subscriber stations configured as a repeater station, said other subscriber stations being capable of receiving and transmitting calls via more than one frequency which is selected by the central station; and

automatically changing, in mid-call if necessary, the subscriber stations used as repeater stations for a call, as call traffic permits, to minimize the number of subscriber stations so used.

4,284,849

MONITORING AND SIGNALLING SYSTEM

Richard W. Anderson, Reading; Robert J. Fahey, Framingham; William R. McClellan, Westford, and J. Edward Schlener, Winchester, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 14, 1979, Ser. No. 94,016
Int. Cl.³ H04M 11/04
U.S. Cl. 179—5 R **26 Claims**

1. In a monitoring and signalling system, apparatus comprising:

sensor means arranged to monitor the occurrence of an associated activity and operative in response to monitoring the occurrence of the activity to produce a signal indicative of the occurrence of the activity;

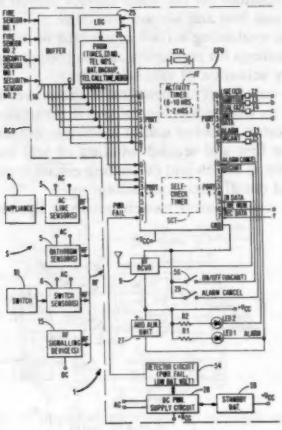
sensor activity recording means for recording sensor activity data representing a count of the number of times the sensor means has monitored its associated activity and produced signals, said data having a first value when the sensor means has not monitored its associated activity and has not produced signals and a different value when the sensor means has monitored its associated activity and produced signals;

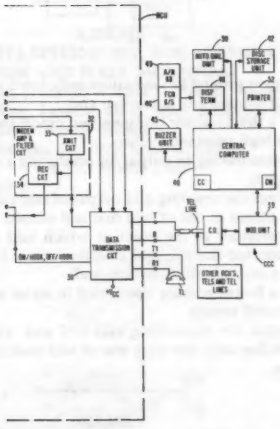
processing means operative when signals are produced by the sensor means to receive and process said signals and in response to processing each signal to change the value of the sensor activity data in the sensor activity recording means to record the occurrence of the activity monitored by the sensor means, whereby the sensor activity recording means maintains a continuing tally of the number of times the sensor means has monitored its associated activity and produced signals;

timing means operative on a regular basis to cause the existing sensor activity data recorded by the sensor activity recording means to be read out therefrom; and

sensor data processing means arranged to receive and process sensor activity data read out from the sensor activity recording means and operative whenever the sensor activity data has its first value indicating that the sensor means

has not monitored its associated activity and produced signals since the last readout of sensor activity data from





the sensor activity recording means to produce an output condition indicative of this fact.

4,284,850

DIGITAL MEMORY PROVIDING FIXED AND VARIABLE DELAYS IN A TASI SYSTEM

Glenn R. Clingenpeel, Northglenn, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 863,903, Dec. 23, 1977. This application Jan. 12, 1979, Ser. No. 3,032

Int. Cl.[2] **H04J** *5/00*

U.S. Cl. 370—81 **4 Claims**

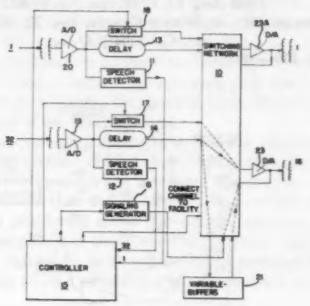
1. A time assignment speech interpolation system comprising:

means for sampling signals detected on each input speech channel;

a random access digital memory connected between said input speech channels and transmission facilities extending to a remote location, said samples being stored in a fixed portion of said memory for a fixed time;

an address generator for generating addresses in a variable portion of said memory which stores said samples in linked segments of said variable portion;

control means having a first portion for storing the addresses of said samples in said linked segments of said variable



portion for variable times until a transmission facility is available and subsequently for retrieving said samples in said linked segments for transmission to a transmission facility.

4,284,851

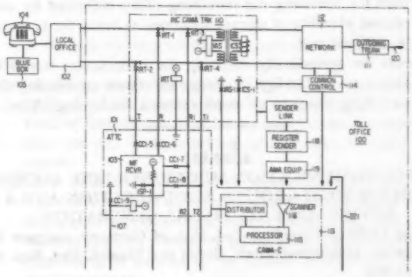
ARRANGEMENT FOR FRUSTRATING FRAUDULENT TELEPHONE CALLS

Philip F. Schweitzer, Colts Neck, and John R. Shine, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 29, 1979, Ser. No. 53,395

Int. Cl.[3] **H04M** *1/66*

U.S. Cl. 179—18 DA **14 Claims**



1. For use in a telephone system wherein called station address information is transmitted between switching offices using a first signaling format different from the signaling format generated by a calling station and wherein said calling station includes a fraud device for simulating said first signaling format in order to manipulate said switching offices to avoid toll charges,

means for frustrating the completion of a call originated by said fraud device

characterized by

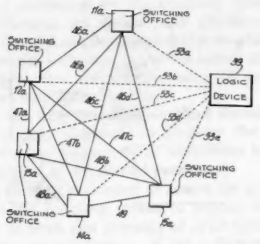
means at one of said offices responsive to said fraud device for mutilating the transmission of signals from said fraud device, said mutilating means comprising means for generating discrete signals and means for coupling said discrete signals with signals transmitted from said fraud device.

4,284,852

ALTERNATE ROUTING FOR A TELEPHONE SYSTEM

Edmund Szybicki, Verdun, and Maurice E. Lavigne, Orleans, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 17, 1979, Ser. No. 67,542
Claims priority, application Canada, Jun. 22, 1979, 330426
Int. Cl.³ H04Q *3/54*
U.S. Cl. 179—18 EA **14 Claims**



1. An alternate routing system for a plurality of telephone switching offices, said system comprising:

at least one group of trunk lines connecting any one switching office in said system to any other switching office in said system;

a first plurality of storage locations, at each said switching office, for storing an indication of the terminating office to which a call is directed;

a second plurality of storage locations, at each said switching office for storing an indication of the switching office most likely to be available as a tandeming office between the originating switching office and the terminating switching office;

a third plurality of storage locations, at each said switching office, for storing an indication of the trunk lines to be used for accessing the switching office indicated by said second plurality of storage locations as being the tandeming offices; and

means for periodically updating the information stored in said second plurality of storage locations, concerning the switching office to be employed as a tandeming office.

4,284,853

TELECOMMUNICATION SUBSCRIBER LINE ACCESS CIRCUIT WITH GROUND KEY INDICATION AND A DEVICE FOR CALL SIGNAL GENERATION

Robert Lechner, Otterfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,838
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911584
Int. Cl.³ H04M *3/02*
U.S. Cl. 179—18 HB **3 Claims**

1. A telecommunications subscriber line access circuit for coupling a two wire subscriber station to a four wire interface to a system, said circuit comprising:

(a) a two-to-four wire hybrid transformer;

(b) a power supply bridge connected to the two wire side of said transformer for providing a potential difference across the two wires of said subscriber station, said power supply bridge including:

(1) a first resistor connected between ground and a first winding of said transformer on the two wire side;

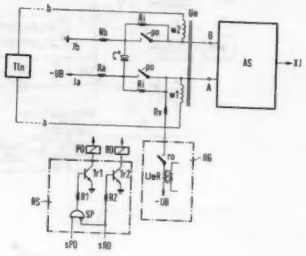
(2) a second resistor connected between a source of potential and the second winding of said transformer on the two wire side; and

(3) a capacitor connected between said first and second resistors on the sides thereof which are connected to said first and second windings;

(c) an evaluating circuit connected to said first and second windings for producing and indicating signal upon ground key actuation of said subscriber;

(d) a cutoff circuit arranged in the power supply bridge, in series with at least one of said first resistor and said second resistor, between said at least one resistor and the respective first and second winding of said transformer at the point at which said evaluating circuit is connected thereto, said cutoff circuit including:

(1) a first cutoff switch which is opened, with a delay,



upon ground key actuation and closed upon termination of ground key actuation; and

(2) a third resistor bridging said cutoff switch and having a high resistance value;

(e) means having an output for producing a call signal at said output;

(f) means for coupling said output of said call signal producing means to one of said first and second windings of said transformer at the point at which said cutoff circuit is connected thereto, said coupling means including:

(1) a second cutoff switch; and

(2) a fourth resistor connected in series with said second cutoff switch;

(g) means for controlling said first and said second cutoff switches such that only one of said switches is closed at a time.

4,284,854

UNIVERSAL SIGNAL GENERATOR FOR GENERATING TELEPHONE SYSTEM HIGH LEVEL SIGNALS

Richard Hayward; John Bottrill, and Robert C. Dittburner, all of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 20, 1979, Ser. No. 68,224
Claims priority, application Canada, Jun. 29, 1979, 330867
Int. Cl.³ H04M *1/50*
U.S. Cl. 179—84 VF **7 Claims**

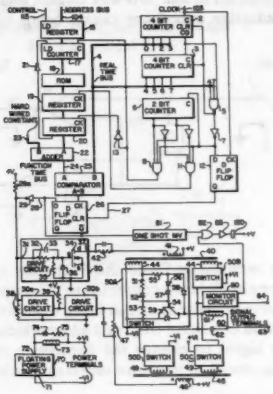
1. A universal high level signal generator operable in response to clock signals, for generating selectable ones of a plurality of predetermined high level signals, comprising:

storage means for storing a plurality of data bytes at least one of each relating to each of the predetermined high level signals;

means for generating a signal stream of periodically occurring low and high signal states defining width modulated pulses in response to at least one of the data bytes from the storage means and the clock signals;

a switching bridge having a control input connected to the signal stream generating means, a first pair of opposite terminals for connection to a source of energizing power, and a second pair of opposite terminals, the switching bridge being responsive to the high and low signal states

of the signal stream, to alternately connect a potential, appearing across the first pair of opposite terminals, to the



second pair of opposite terminals to provide said high level signals.

4,284,855

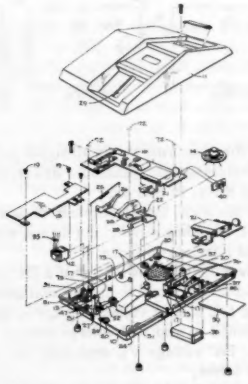
BASE FOR TELEPHONE SET, FOR ALTERNATIVE DESK AND WALL MOUNTING

William J. Adams, Franklin; William F. Wernet, Nashville, and Steve W. Haskins, Laverne, all of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada

Filed Aug. 22, 1979, Ser. No. 68,584

Int. Cl.³ H04M *1/02*

U.S. Cl. 179—100 C **9 Claims**



1. An adaptable telephone baseplate for alternative wall and desk top mounting, comprising:

a base member and a peripherally extending rim on the base member extending upwardly from a top surface on the base member;

an enclosed recess extending from a bottom surface of the base member up through the base member and upwardly of said top surface, for positioning of a modular wall mounting plug therein, said recess being defined by a first aperture in said base member, upwardly extending side walls around the periphery of said first aperture and a top wall extending between said side walls at a position above said base member, said top and side walls enclosing said recess from the remainder of the top surface of said base member;

modular jack mounting means at a top end of the base member, said modular jack mounting means being aligned with a second aperture through the base member for insertion of a modular line cord plug through said second aperture and into a jack mounted at said mounting means;

a slot in said base member extending from said enclosed recess to said second aperture, for insertion of a short cord between said modular wall mounting plug and a further modular plug adapted for insertion into said jack for wall mounting of the baseplate; and

at least two mounting apertures in said base member, each said mounting aperture of keyhole formation and comprising a circular aperture portion and a waisted slot portion, the slot portion narrower than the diameter of the circular aperture portion and positioned above the circular aperture portion when the baseplate is in a wall mounting position, said waisted slot portion defined by two spaced resilient members for producing a snap fit on a mounting stud attached to a wall.

4,284,856

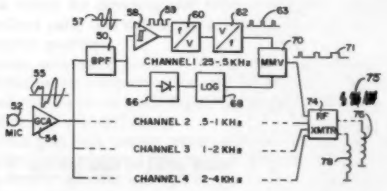
MULTI-FREQUENCY SYSTEM AND METHOD FOR ENHANCING AUDITORY STIMULATION AND THE LIKE

Ingeborg J. Hochmair, and Erwin S. Hochmair, both of Jaunerstr 27, A-1130, Vienna, Austria

Filed Sep. 24, 1979, Ser. No. 77,791

Int. Cl.³ H04R *25/02*

U.S. Cl. 179—107 E **22 Claims**



1. A multi-frequency system for electrical stimulation comprising:

transmission means for transmitting a plurality of signals each of which is modulated by a signal representing a band of frequencies, said transmission means including at least one coil for transmitting said plurality of modulated signals,

passive multi-channel receiver means for receiving said transmitted signals with each channel responsive to one of said signals representing a band of frequencies, said multi-channel receiver means including a plurality of coils corresponding in number to the number of channels in said receiver means,

a multi-electrode prosthetic device, and

means connecting a signal from each of said channels to at least one electrode of said prosthetic device whereby said prosthetic device provides electrical stimulation.

4,284,857

TONE GENERATOR

Michael Slavin, Troy; Irvin B. Rea, Royal Oak, and George S. Todd, Washington, all of Mich., assignors to Lectron Products, Inc., Troy, Mich.

Filed Jul. 13, 1979, Ser. No. 57,516

Int. Cl.³ G10K *9/14;* **H04R** *1/02, 13/00*

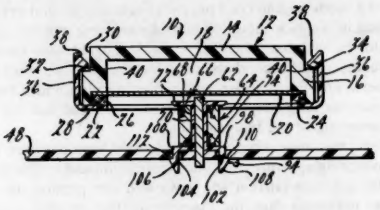
U.S. Cl. 179—115 R **26 Claims**

13. In a tone generator of the type having a casing provided with a sound cavity and a diaphragm mounted for free vibra-

tory movement across and closing said cavity, the improvement comprising

a circuit board,

a pole piece having a coil mounting portion,



fastening means detachably interconnecting said pole piece and said casing with said coil mounting portion spaced a predetermined distance from said diaphragm, and

means mounting said pole piece on said circuit board with said casing above and spaced from said board.

4,284,858

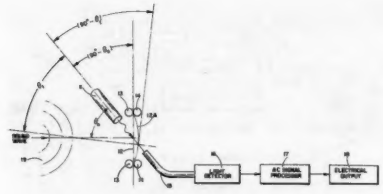
DICHROIC TRANSDUCER

Margie M. Nicholson, San Marino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 6, 1979, Ser. No. 101,328

Int. Cl.³ H04R *23/00*

U.S. Cl. 179—121 R **6 Claims**



1. A dichroic transducer comprising:

light source means for providing a beam of light;

a film comprising a dichroic material disposed in the path of said beam of light, said film being stretched so that portions thereof are displaced in response to an incoming information-containing acoustic wave directed at said film, said displaced portions modulating said beam of light directed thereto in accordance with the information contained in said acoustic wave; and

detector means disposed in the path of said modulated beam of light for detecting said modulated beam.

4,284,859

ADAPTIVE ELECTRONIC HYBRID CIRCUIT

Takashi Araseki, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

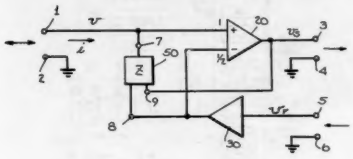
Filed Apr. 10, 1979, Ser. No. 28,869

Claims priority, application Japan, Apr. 24, 1978, 53/44496

Int. Cl.³ H04B *1/58*

U.S. Cl. 179—170 NC **15 Claims**

1. An adaptive electronic hybrid circuit comprising a two-wire terminal for connection to a two-wire circuit, a reception terminal for connection to receive signals from a four-wire circuit and a transmission terminal connected to transmit signals to said four-wire circuit, an adaptive impedance circuit having first, second and third terminals, said adaptive impedance circuit having variable internal impedance characteristics which can be adaptively varied to correspond to the impedance characteristics of said two-wire circuit, an adder connected to add in reverse phase a half value of a reception signal from said reception terminal to a signal from said two-wire terminal to produce a transmission signal on said transmission terminal, said first terminal of said adaptive impedance circuit being connected to said two-wire circuit, said second terminal of said adaptive impedance circuit being connected to said



reception terminal and said third terminal of said adaptive impedance circuit being connected to the output of said adder, said adaptive impedance circuit being operative in response to the reception of a signal from said adder which is less than said reception signal to change the impedance of said adaptive impedance circuit to minimize said transmission signal.

4,284,860

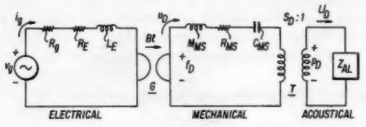
TIME DOMAN MEASUREMENT OF MOVING COIL LOUDSPEAKER DRIVER PARAMETERS

W. Marshall Leach, Jr., Decatur, and Ronald W. Schafer, Atlanta, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Mar. 28, 1980, Ser. No. 135,085

Int. Cl.³ H04R *29/00*

U.S. Cl. 179—175.1 A **9 Claims**



1. A method for measuring the small-signal parameters of a moving-coil electromagnetic transducer driver, comprising:

mounting said driver in free air;

coupling the electrical input terminals of said driver to a series circuit including a switching means, a source of DC voltage, and a series resistance;

closing said switching means such that a DC current flows through said series circuit including said driver;

measuring the DC source voltage V_g appearing across the output terminals of said DC voltage source;

measuring the DC voltage V_{vc} appearing across the terminals of said driver;

calculating the voice coil resistance R_E of said driver and the steady state current I_{go} flowing in said series circuit using said measured voltages V_g and V_{vc};

opening said switch;

measuring the AC voltage $v_{vc}(t)$ appearing across the terminals of said driver as a function of time;

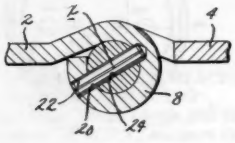
determining the amplitude coefficient A, the attenuation factor α, and the frequency ω_d of said measured AC voltage; and

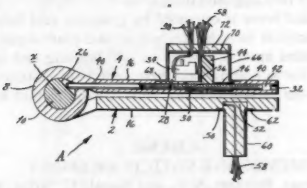
calculating the free-air frequency of resonance ω_S, the electrical quality factor Q_{ES}, the mechanical quality factor Q_{MS}, and the total quality factor Q_{TS} for said driver using said amplitude coefficient, said attenuation factor, and frequency ω_d.

4,284,861
SWITCH HINGE

David A. Senften, Florissant, Mo., assignor to Hager Hinge Company, St. Louis, Mo.

Filed Jan. 9, 1980, Ser. No. 110,603
Int. Cl.[3] H01H 3/16
U.S. Cl. 200—61.7 16 Claims



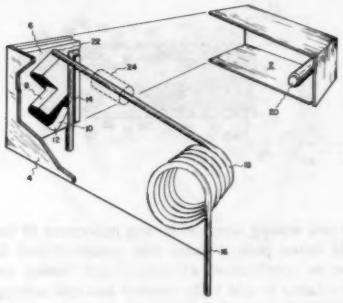


1. A hinge comprising: first and second hinge leaves each having at least one knuckle, with the knuckles of the leaves being offset from, yet aligned with, each other, the second leaf further having a guideway that opens into the interior of the knuckle on that leaf; a hinge pin located within the knuckles of the leaves to enable the leaves to pivot relative to each other about the axis of the pin, the hinge pin being fixed in position with respect to the knuckle of the first leaf and having a camming surface within the knuckle of the second leaf, with the camming surface being in the region of the end of the guideway, so that as the leaves pivot with respect to each other, the camming surface will move within the knuckle of the second leaf; a push rod located along the guideway and being capable of moving axially therein, the push rod having its end located close enough to the camming surface to be engaged by the caming surface so that the push rod will move axially as the leaves pivot with respect to each other; means for urging the push rod toward the hinge pin within the knuckle of the second leaf; and switch means for changing the condition of an electrical circuit in response to movement of the push rod along the guideway, said switch means including a first component mounted in a fixed position on the second leaf and a second component mounted on the push rod such that it projects laterally therefrom, whereby the relative positions of the first and second components change as the push rod moves along the guideway in response to pivoting movement of the hinge leaves, the second component further being secured to the push rod such that its axial position along the push rod can be altered with relative ease, one of the components being an electrical switch that is in the electrical circuit and the other of the components being an actuator which operates the switch and causes the switch to change condition as relative movement occurs between the switch and the actuator.

4,284,862
ACCELERATION SWITCH

David L. Overman, and Robert N. Johnson, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 20, 1980, Ser. No. 132,205
Int. Cl.[3] H01H 35/02, F42C 15/40
U.S. Cl. 200—61.45 R 9 Claims



1. A switch device comprising

a first contact means comprising essentially an elastic resilient electrically conductive element biased in a sole direction,

a second contact means,

guide means for directing said first contact means along a defined path, said defined path comprising at least three distinct portions,

wherein successive portions of said path are deviated in direction with respect to one another and each portion of said path forms an acute angle with respect to a line parallel to said sole direction,

wherein said first contact means will traverse said defined path through at least two portions thereof in a direction generally opposite said sole direction upon application of an acceleration force in said sole direction and will traverse the remainder of said portions in a direction generally along said sole direction upon release of said acceleration force.

3. A device as in claim 1, wherein said first contact is biased into a first position in said path, said path extending through at least two of said portions thereof from said first position to a second position in a direction generally opposite said sole direction, said path further extending from said second position to a third position in a direction generally along said sole direction,

wherein said first contact means contacts said second contact means when said first contact means is at said third position.

9. A switching device as in claim 3 or 8, wherein said first and second contact means remain out of contact with one another until said acceleration force has acted upon said device for a sufficient length of time to move said first contact means to said second position, and until said first contact means has moved to said third position, whereby said device constitutes a time-delay switch.

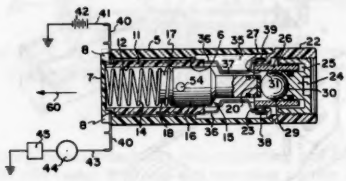
4,284,863
VELOCITY CHANGE SENSOR

David S. Breed, Boonton, N.J., assignor to Breed Corporation, Fairfield, N.J.

Filed May 9, 1979, Ser. No. 37,524
Int. Cl.[3] H01H 35/14; B60R 21/08
U.S. Cl. 200—61.53 29 Claims

1. In a sensor construction adapted for mounting on a vehicle or the like having an instrumentality to be operated in

response to acceleration of said vehicle above a predetermined threshold, said sensor having a body member provided with a tubular passage having a bore within which a sensing mass is mounted for movement in response to acceleration of said vehicle from an initial position toward a second position in which said sensing mass initiates operation of said instrumentality, and biasing means exerting a predetermined, yieldable



force on said sensing mass restraining movement of the latter from said initial position until said predetermined force is overcome by acceleration whereupon said biasing means is movable relative to said body member and said sensing mass, the improvement comprising means responsive to and following movement of said biasing means a predetermined distance relative to said sensing mass for damping further movement.

4,284,864

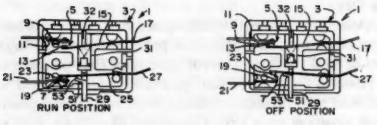
LOW ACTUATING FORCE SWITCH

William D. Crow, and John G. Lewis, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 26, 1979, Ser. No. 6,570

Int. Cl.[3] **H01H** *3/00, 35/10;* **H02P** *1/42;* **H02K** *11/00*

U.S. Cl. 200—153 V **7 Claims**



1. A switch comprising a fixed contact, a cantilevered resilient, flexible switch arm, a movable contact carried by said switch arm, said movable contact together with said switch arm being movable from an open position in which said movable contact is clear of said fixed contact and a closed position in which said contacts are in electrical contact with one another, and a one-piece plunger for moving said switch arm from its open to its closed position, a resilient spring interposed between said switch arm and said plunger, said plunger and said spring being movable in a direction generally toward said fixed contact for closing contacts, said plunger being movable through a stroke greater than the movement of said switch arm required to close said contacts, said spring being engageable with said switch arm for transmitting movement of said plunger to said switch arm, for substantially taking up said portion of said stroke greater than the movement required to close said contacts substantially without subjecting said switch arm to undue bending, but yet for applying a limited amount of additional force on said switch arm thereby to insure good switch contact when said switch is in its closed position.

4,284,865

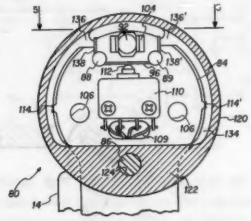
THROTTLE FORCE DETECTOR

Gordon E. Nicholson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 26, 1979, Ser. No. 52,168

Int. Cl.[3] **H01H** *9/06*

U.S. Cl. 200—157 **4 Claims**



1. A switch actuating mechanism, comprising:

a graspable housing;

plate means for pivotally attaching said housing to a manually operable lever, said housing pivotally movable in either of two opposite directions with respect to said lever when said lever is operated by grasping said housing;

a first electrical switch attached to said plate means; and

spring means mounted between said housing and said plate means for actuating said first switch in response to the movement of said housing with respect to said lever.

4,284,866

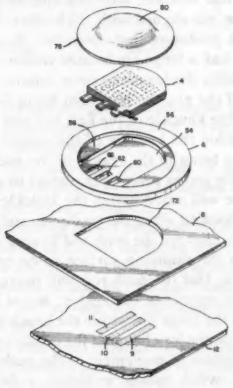
MEMBRANE SWITCH ASSEMBLY

James R. Bryce, Fairport, N.Y., and Donald G. Stillie, Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 25, 1980, Ser. No. 180,746

Int. Cl.[3] **H01H** *3/12, 13/02*

U.S. Cl. 200—159 B **10 Claims**



1. A switch assembly mounted in a supporting panel means and a circuit board located adjacent to, and extending parallel to said panel means, said switch assembly having a conductor leads extending therefrom and connected to circuit board conductors in said circuit board, said switch assembly and said supporting panel means being characterized in that:

said switch assembly comprises a membrane switch and switch supporting means, said membrane switch being supported in said panel means by said switch supporting means,

said membrane switch comprising a pair of flexible insulating substrates having opposed surfaces, switch conductors

on said opposed surfaces and separator means between said opposed surfaces normally maintaining said opposed surfaces in spaced-apart relationship, said separator means permitting relative flexing movement of said substrates normally of their own planes towards each other thereby to move said switch conductors into contact with each other,

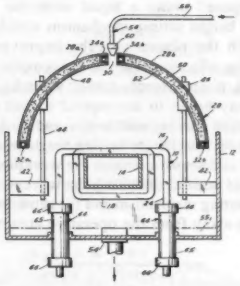
said conductor leads comprising resilient sheet metal conductors connected to said switch conductors and extending from said switch assembly towards said circuit board, said conductor leads having contact portions bearing against, and in electrical contact with, said circuit board conductors.

4,284,867

CHEMICAL VAPOR DEPOSITION REACTOR WITH INFRARED REFLECTOR

Lawrence Hill, Short Hills; Dennis Garbis, Dix Hills, and Robert Heller, Levittown, all of N.Y., assignors to General Instrument Corporation, Clifton, N.J.

Filed Feb. 9, 1979, Ser. No. 10,746
Int. Cl.[3] H05B *6/42*; C23C *13/08*
U.S. Cl. 219—10.49 R **1 Claim**



1. A chemical vapor deposition reactor comprising the deposition enclosure having a substantially horizontal axis, said enclosure being adapted to receive a wafer mounted on a susceptor therein and having gas inlet and outlet ports, and induction coil comprising a plurality of spaced turns situated external to and surrounding at least a portion of said enclosure, an infrared reflector assembly mounted external to said enclosure with at least a portion of said coil interposed therebetween, said reflector redirecting and focusing energy toward said axis of said enclosure and comprising first and second concave parts with a space therebetween, said space extending in the direction substantially parallel to said axis, and means for preventing deposition of dopents on the surface of said enclosure, said deposition preventing means comprising means for spraying de-ionized liquid on said enclosure, said spray means being at least partially situated within said space between said reflector assembly.

4,284,868

MICROWAVE OVEN

James E. Simpson, Coralville, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

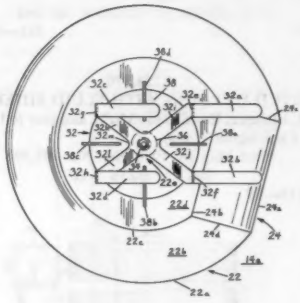
Filed Dec. 21, 1978, Ser. No. 971,727
Int. Cl.[3] H05B *6/72*
U.S. Cl. 219—10.55 F **39 Claims**

4. A directional rotating antenna for use in a microwave oven heating cavity having at least one conductive wall comprising:

a. at least one pair of end fed radiating elements, all of said elements substantially planar to one wall of a microwave oven heating cavity;

b. support conductor extending upwardly from an end of each of said elements, and;

c. transmission line conductor connected between each of said supports to a common junction whereby each of said elements function as a combined transmission line and long wire antenna, each of said transmission line conductors between said common junction and said support conductor constitute an air dielectric microstrip parallel plate transmission line between said transmission line conductors and said conductive wall of said microwave oven cavity, and said elements provide uniform energy distribution in said microwave oven cavity on rotation about an axis of said wall of said microwave oven cavity.

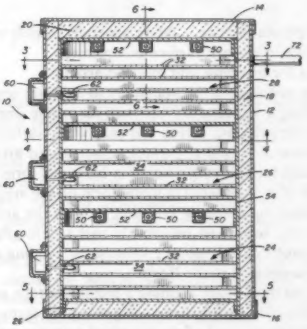


4,284,869

MICROWAVE WATER HEATER

Leo W. Pinkstaff, 1707 Talley St., Savannah, Tenn. 38372

Filed Mar. 6, 1980, Ser. No. 127,863
Int. Cl.[3] H05B *6/80*
U.S. Cl. 219—10.55 A **7 Claims**



1. A water heater comprising:

a housing;

a plurality of heating zones formed within said housing;

a water inlet connected to said housing;

a water outlet connected to said housing;

a plurality of energy sources, one of said energy sources being disposed in each of said heating zones;

a plurality of thermostats, one of said thermostats being disposed in each of said heating zones and connected to said energy source diposed in the associated heating zone;

a fluid flow path defined within said housing extending through each of said heating zones sequentially; and

wherein said thermostats in each of said sequential zones are set at incrementally higher temperatures to increase the

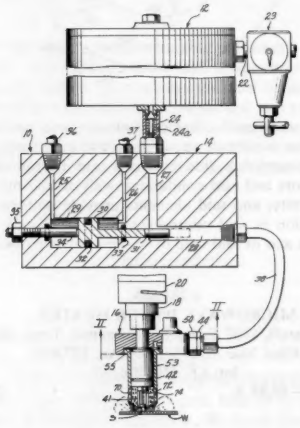
water temperature as it flows sequentially through said zones.

4,284,870

STUD WELDING WITH FLUID SHIELD

Donald H. Ettinger, Royal Oak, Mich., assignor to USM Corporation, Farmington, Conn.

Filed May 18, 1978, Ser. No. 907,393
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—99 **18 Claims**



1. Apparatus for arc welding a metallic article such as a stud or the like to a work surface comprising:

means for gripping said metallic article;

means connecting the apparatus to a power source for providing a welding arc between an article disposed in said article gripping means and said work surface and means disposed on said apparatus adjacent said article gripping means for spraying a liquid in atomized form to provide a thin film of material in liquid form on the area of the work surface surrounding said article, with the article contacting the work and retained in said article gripping means whereby contaminates produced by welding are collected in suspension in the liquid.

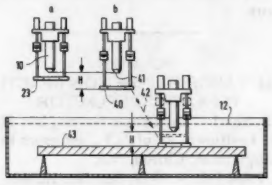
18. A method of arc welding a metallic article such as a stud or the like to a work surface comprising the steps of: retaining the article at one end of an elongated gripping collet which is surrounded by a tubular flash shield having a plurality of openings provided therein; with the article contacting the work surface, spraying a liquid in atomized form from adjacent the opposite end of the gripping collet to flow between the collet and the flash shield with a portion thereof directed through the flash shield openings, to provide a thin film of material in liquid form in the area of the work surface surrounding the article for collection of contaminates in suspension during the welding process, sequentially thereafter providing an arc between the article and the surface to form a weld between the article and the surface while the material is in liquid form; and removing the film of material including the contaminates from the work surface to thereby remove contamination produced during the welding operation.

4,284,871

AUTOMATIC ADJUSTMENT OF THE INITIAL HEIGHT OF A FLAME CUTTER TO A WORKPIECE

Maurice Mawson, Cramlinton, and Alexander Jamieson, Blyth, both of England, assignors to Messer Griesheim, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 23, 1979, Ser. No. 87,350
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2848957
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—121 PV **5 Claims**



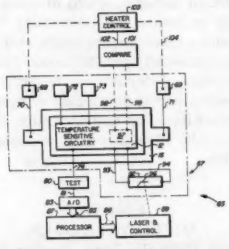
1. In an apparatus for automatically setting the initial height of a plasma torch cutter over a workpiece having an irregular surface and disposed under a liquid with the plasma torch cutter having a height setting mechanism which is steered in dependence with the plasma arc, the improvement being a sensor means for effecting relative movement between said sensor and said plasma torch cutter whereby the distance therebetween may be set to correspond to said initial height, coupling means for moving said sensor and said plasma torch jointly as a unit by said height setting mechanism toward the workpiece until said sensor contacts the workpiece, and means responsive to said sensor contacting the workpiece for turning off said height setting mechanism and for retracting said sensor by lifting means away from the operative area of said plasma torch cutter.

4,284,872

METHOD FOR THERMAL TESTING AND COMPENSATION OF INTEGRATED CIRCUITS

Jerald G. Graeme, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Division of Ser. No. 869,228, Jan. 13, 1978. This application Apr. 25, 1980, Ser. No. 144,179
Int. Cl.³ B23K *26/00*
U.S. Cl. 219—121 LJ **15 Claims**



1. A method of trimming the value of an element of an integrated circuit to compensate for temperature sensitivity of the integrated circuit, the method comprising the steps of:

(a) applying an operating voltage to a temperature sensitive element of the integrated circuit;

(b) applying a powering voltage to a heating element in the integrated circuit for a sufficiently long time to heat said temperature sensitive circuitry to approximately a predetermined temperature, the heating element being disposed

in the integrated circuit adjacent to said temperature sensitive circuitry;

(c) measuring a temperature sensitive electrical parameter of said temperature sensitive circuitry when said time elapses and substantially before thermal equilibrium is established in the integrated circuit;

(d) comparing the value of the measured temperature sensitive electrical parameter to a reference value;

(e) producing error information representative of the difference between the value of the measured electrical parameter and the reference value; and

(f) laser trimming an element of the integrated circuit by an amount determined from said error information to adjust the temperature sensitive electrical parameter to a predetermined value, said element being determinative of said temperature sensitive electrical parameter.

4,284,873

WELDING TORCH

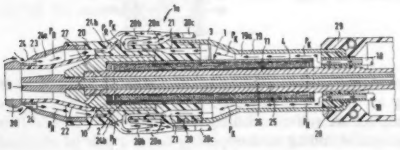
Jürgen Schlüter, Laatzen, Fed. Rep. of Germany, assignor to E. Schlüter Fachhandel für Schweisstechnik, Laatzen, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,513

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823037

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—136 **13 Claims**



1. A torch, particularly a metal inert gas welding torch, comprising

a torch housing having a front end portion provided with an outlet nozzle adapted to face towards an object to be treated with the torch, and having an outlet at which welding heat and fumes develop in operation of the torch; elongated hermetically closed heat transmitting means confined in its entirety within said housing for automatically transporting heat from a heat receiving zone adjacent said front end portion to a heat releasing zone rearwardly spaced from said heat receiving zone; and combined means for cooling said front end portion and for removing the fumes which develop in operation of the torch, comprising a chamber in said front end portion and having an outlet, means for circulating a cooling medium into said chamber and through said outlet thereof, means for creating a pressure drop in the cooling medium entering the chamber so as to produce suction in the chamber, and channel means connecting said chamber with fume inlet means located in the region of said outlet nozzle near the operating zone and integrated with said outlet nozzle, so that the suction produced in said chamber aspirates fumes through said inlet means and through said channel means and causes them to mix with the cooling medium in the chamber.

4,284,874

CLAMP TYPE HEATER FOR BACK-PART MOLDING SHOE MACHINES

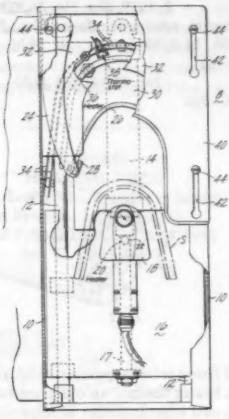
Arthur W. Prichard, and Francis B. Sharp, both of Leicester, England, assignors to USM Corporation, Farmington, Conn.

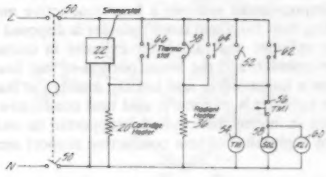
Filed Sep. 17, 1979, Ser. No. 75,905

Claims priority, application United Kingdom, Oct. 5, 1978, 39373/78

Int. Cl.³ A43D *25/20*; H05B *1/02*

U.S. Cl. 219—215 **11 Claims**





1. A heater device for heating portions of show uppers prior to molding such portions to a desired shape, the device comprising:

an inner form and a cooperating outer band;

a motor means for effecting relative movement between said inner form and said outer band whereby a shoe upper portion placed therebetween can be clamped therebetween;

a first heating means for heating said inner form and a second heating means for heating said outer band, said second heating means comprising radiant heater means to which the outer surface of the band is exposed, wherein said second heating means is connected to a first circuit, which also incorporates thermostatic control means for limiting the temperature to which said outer band is heated by said second heating means and further to a second circuit, which also incorporates a switch which is operated when the motor means is actuated, the heating device being such that the temperature to which said outer band is heated is controlled by said thermostatic control means when the device is in a rest condition, but said second heating means is rendered operative by said switch when said motor means is activated, regardless of said thermostatic control means; and

wherein said second heating means is accommodated in a chamber which is open at the bottom, through which said band extends thereinto, and further wherein said theremo-

static control means is responsive to change in the temperature of the air in the chamber.

4,284,875

HEAT ROLLER FIXING APPARATUS

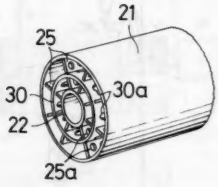
Ryoichi Namiki, Hino; Yuichiro Higashi, Kawasaki; Toshiyuki Kikuchi, Yokohama; Ichiro Fukushima; Yasuo Asahina, both of Tokyo, and Setsuo Soga, Mitaka, all of Japan, assignors to Richo Company Ltd., Tokyo, Japan

Division of Ser. No. 836,413, Sep. 26, 1977. This application Apr. 2, 1979, Ser. No. 26,322

Claims priority, application Japan, Sep. 27, 1976, 51-115547; Oct. 20, 1976, 51-125916; Nov. 30, 1976, 51-143795; Dec. 3, 1976, 51-145221

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—216 **11 Claims**



1. In a heat fixing roller apparatus comprising an inner cylinder having a heater therein, an outer cylinder which is made integral with said inner cylinder at respective ends thereof, a vacuum chamber which is formed between said inner cylinder and said outer cylinder and which contains a heating medium, the improvement wherein a heat conductive means for conducting heat from said inner cylinder is disposed between said inner cylinder and said outer cylinder in contact with said inner cylinder, and the lower portion of said heat conductive means is immersed in said heating medium at least when said outer cylinder is stationary, said heat conductive means comprising an intermediate cylinder supported on said inner cylinder by a plurality of heat conductive support arms.

4,284,876

THERMAL PRINTING SYSTEM

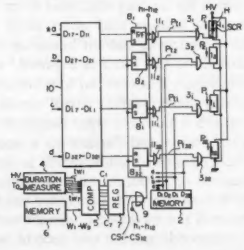
Norio Ishibashi, and Kazuo Nakano, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 137,784

Claims priority, application Japan, Apr. 24, 1979, 54/49787; Apr. 24, 1979, 54/49788

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—216 **6 Claims**



1. A thermal printing system comprising;

(a) a plurality of thermal elements each having a heater and a switching means connected series to said heater, one end of each heater being connected to a power supply which provides the predetermined width of repetitive power pulse, and the other end of the switching means being grounded, said thermal elements being aligned on a straight line with close relations to each other contacting a thermal paper in the direction perpendicular to the moving direction of a thermal paper,

(b) first digital memory which stores the black/white information to be printed for each dot,

(c) second digital memory which stores the information relating to the previously printed information for each dot,

(d) conversion means for converting the output of the second digital memory to the trigger timing pulse for initiating the heating of each thermal element, and

(e) AND circuit means for providing the logical product of said trigger timing pulse and the output of said first digital memory to fire each thermal element.

4,284,877

ELECTRICALLY HEATED HAIR CURLER

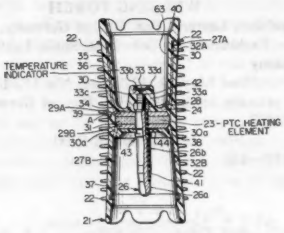
Yoshinori Abura; Fumiya Ueda; Nobuyuki Morihara, and Tomohiro Kami, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 21, 1978, Ser. No. 934,726

Claims priority, application Japan, Aug. 27, 1977, 52-103051

Int. Cl.³ A45D *2/36*; H05B *1/00*

U.S. Cl. 219—222 **15 Claims**



1. A hair curler comprising an elongated hair bobbin including an opening at one end, a PTC heating element having a temperature self-controlling function housed in said hair bobbin and including two opposing sides, a pair of opposed cup-shaped generally cylindrical members housed in said bobbin, each cylindrical member including a bottom and a side wall, said heating element being held between the opposed bottoms of said cup-shaped members, each of said bottoms defining an electrode plate arranged in contact with a side of said heating element for conducting heat from said heating element to the side wall of each member, the latter defining heat conductors for transmitting the heat of the heating element to the hair bobbin, and a power supplying pin comprising first and second power supplying terminals which are connected to a respective one of said electrode plates and an insulator interposed between said terminals, one end of said power supplying pin extending in one direction through said heating element and electrode plates for fastening the heating element and said electrode plates together and another end of said pin extending in an opposite direction along a longitudinal axis of the hair bobbin toward said opening of the bobbin, said pin being accessible through said opening and being adapted for connection to a power source.

4,284,878

FLUID LEVEL DETECTOR

Harold U. Bartels, Riverside, Calif., assignor to Bourns Medical Systems, Inc., Riverside, Calif.

Filed Aug. 20, 1979, Ser. No. 68,116

Int. Cl.³ F24H *1/06*

U.S. Cl. 219—272 **9 Claims**

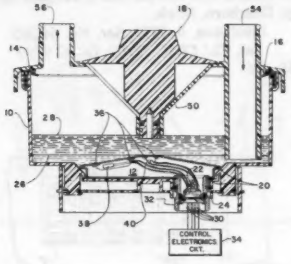
1. A device for detecting when the level of fluid in a vessel

decreases below a predetermined fluid level, said device comprising:

a thermally conductive cover element covering at least part of the bottom of the vessel and having a raised portion rising to the predetermined fluid level;

heating means for directly heating conductively substantially all of said cover element except for said raised portion;

heat sensitive means, attached to the interior of said cover element in said raised portion for producing an output signal which varies in amplitude as a function of the temperature sensed in said raised portion, said output signal varying around a first level when said raised portion is submerged below the surface of said fluid and varying around a second level when said raised portion is exposed to air; and



a control circuit for (a) regulating the temperature of said fluid below the boiling point thereof by controlling the application of electric power to said heating means as a function of the amplitude of said output signal when said output signal varies around said first level, and (b) producing a warning signal when the output signal is varying around the second level.

4,284,879

METHODS OF CONTAINING FLUIDS DELETERIOUS TO THE CONTAINER

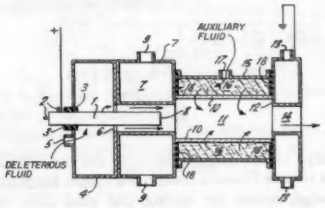
Geoffrey F. Eveson, Grimsby, and Alan W. Scruby, Brigg, both of England, assignors to Laporte Industries Limited, England

Continuation of Ser. No. 683,715, May 6, 1976, abandoned. This application Jun. 14, 1979, Ser. No. 48,505

Claims priority, application United Kingdom, May 21, 1975, 21715/75

Int. Cl.³ H01H 1/00

U.S. Cl. 219—383 **6 Claims**



1. A method of temporarily containing a hot fluid in a chamber defined at least in part by a permeable wall member, the hot fluid having a temperature at least equal to the minimum deterioration temperature of the wall member, the hot fluid thereby having a deleterious effect on the wall member on contact therewith; which comprises; providing for the chamber at least one wall member constructed of heat insulating, refractory ceramic fibers comprising fibers of inorganic compounds selected from the group consisting of alumina, silica, zirconia and silica/alumina, the wall member having a density of from 0.16 to 0.80 g/cm^3 and a uniform permeability, to an auxiliary fluid having no deleterious effect on said wall member, of from 10^{-5} to 10^{-9} cm^2; causing said auxiliary fluid to permeate through the permeable wall member, under a pressure from outside the chamber and pass into the chamber, said auxiliary fluid having a temperature below the minimum deterioration temperature of the wall member and being non-deleterious toward the wall member and the fluid to be contained; introducing the fluid having a deleterious effect on the wall into the chamber under a pressure less than the pressure of the auxiliary fluid; and removing the fluid having a deleterious effect from the chamber; whereby the passage of the auxiliary fluid reduces the contact between the deleterious fluid and the wall member during the residence time of the deleterious fluid in said chamber.

4,284,880

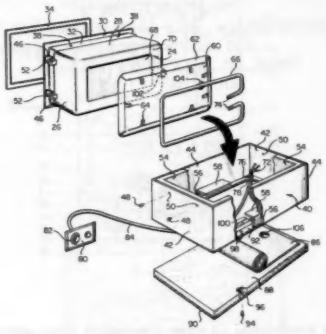
HEATING WELL

William Keiser, St. Louis, Mo., assignor to International Foodservice Equipment Systems, Inc., Elgin, Ill.

Filed Feb. 6, 1979, Ser. No. 9,948

Int. Cl.³ H05B 1/00

U.S. Cl. 219—415 **5 Claims**



1. An improved heating well for mounting to the underside of a counter top having an opening therein and for receiving through said counter top opening a removable food pan and maintaining food in said food pan at a desired temperature, said heating well comprising:

a well pan having an open top end, continuous side walls, and a bottom wall;

means for mounting the well pan to a counter top under an opening in the counter top;

an outer housing having an open top end and an open bottom end, said open bottom end having flanges extending therefrom, said well pan being located in the housing with said side walls being spaced inwardly from the housing;

a plurality of brackets secured to said well pan and extending from said side walls to be adjacent said housing, each of said brackets and said housing having aligned holes therethrough;

a plurality of resilient push rivets adapted to be installed in said aligned holes to secure said housing to said well pan;

means including at least two angle members for providing peripheral support surfaces facing the open top end of said housing, each of said angle members having a first leg secured to said housing and a second leg extending inwardly in said housing;

a metallic heat dispersing plate adapted to fit through the open top end of the housing and be supported on the support surfaces with the bottom wall of said well pan residing on said heating dispersing plate;

means including a high-temperature electric heating element for heating said well pan through said heat dispersing plate, said heat dispersing plate having a plurality of tabs stamped therefrom and bent to extend from the underside thereof and over said heating element to secure said heating element below said heat dispersing plate;

a bottom cover, said bottom cover and said bottom end flanges having aligned holes therethrough; and

means including a second plurality of resilient push rivets adapted to be installed in said aligned holes to secure said bottom cover to the bottom end of said housing.

4,284,881

DIGIT WHEEL COUNTER

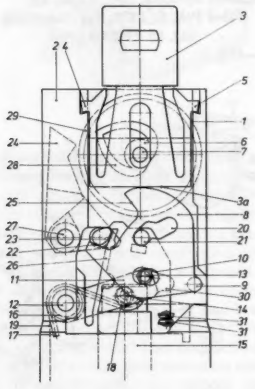
Hans Neher, Hausen, Fed. Rep. of Germany, assignor to J. Hengstler K.G., Aldingen, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,035

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900415

Int. Cl.³ G06C *15/42*

U.S. Cl. 235—1 C **11 Claims**



1. In a mechanical counter comprising digit wheel means, stepping pinion means movable between first and second positions, in which said pinion means engage and disengage, respectively, said digit wheel means, and a resetting mechanism comprising a resetting rake which is movable between an initial position, in which said rake is clear of said digit wheel means, and an actuated position, and is arranged to reset said digit wheel means by a movement from said initial to said actuated position, a pivoted member which is pivoted on a first stationary axis and has eccentric portions operatively connected to said pinion means and said rake, and actuating means which are operatively connected to said pivoted member and operable to move by means of said pivoted member said pinion means from said first position to said second position and back to said first position and to move by means of said pivoted member said rake to said actuated position when said pinion means are in said second position and subsequently to move said rake back to said initial position by means of said pivoted member

the improvement residing in that

said pivoted member comprises an S-shaped cam slot and a U-shaped recess,

said pinion means comprise a pinion-carrying axle, which engages said cam slot,

said rake is pivoted on a second stationary axis and carries a coupling pin extending into said recess and is pivotally movable between said initial and actuated positions,

said recess has in the direction of the pivotal movement of said pivoted member about said first axis an extent which exceeds the diameter of said coupling pin so that there is lost motion between said coupling pin and said pivoted member,

said pivoted member is adapted to cooperate with said coupling pin only when said pinion means are in said first and second positions, and

resilient means are provided which tend to yieldably hold said rake in its initial and actuated positions.

4,284,882

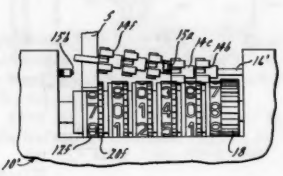
TAMPER RESISTIVE ODOMETER

Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1979, Ser. No. 64,205

Int. Cl.³ G01C *22/00*; G06C *9/00*

U.S. Cl. 235—96 **7 Claims**



1. In a multi-wheel type odometer utilizing an up-counting pinion gear between each pair of adjacent wheels and engaged with at least one of said wheels freely mounted on a common pinion shaft, an improvement comprising:

a brittle pinion shaft rigidly mounted so as to fracture in the event attempts are made to disengage any up-counting pinion gear from its associated wheel.

4,284,883

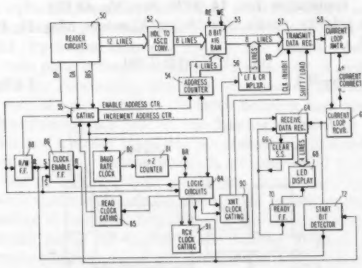
CARD READER WITH IMPROVED DATA PROCESSING TIMING CONTROL

John C. Schisselbauer, Southampton, Pa., assignor to Peripheral Dynamics, Inc., Norristown, Pa.

Filed May 23, 1979, Ser. No. 41,897

Int. Cl.³ G06K *7/016, 7/00*

U.S. Cl. 235—474 Q **6 Claims**



1. A badge reader adapted to carry out operations with a device at a remote location comprising means for reading data from a badge, means for storing said read data, operation means for carrying out selected operations with said remote location device including means for transmitting stored data to a remote location and means for receiving data from said remote location, control means for generating operation signals for initiating said selected operations and for generating control signals for controlling said operation means, characterized by said control means including a timing signal generator which controls the timing of said control signals, and timing signal control means for receiving signals from said remote

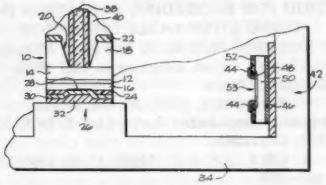
location and for enabling said timing signal generator only while one of said selected operations is being carried out.

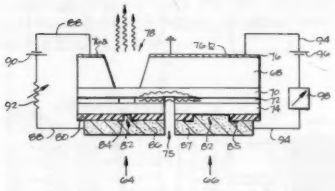
4,284,884

ELECTRO-OPTIC DEVICES

John C. Dyment, Kanata; Jozef Straus, Ottawa; Tibor F. I. Kovats, Ottawa; William J. Sinclair, Ottawa, and Anthony J. Springthorpe, Richmond, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 9, 1980, Ser. No. 138,747
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—205 **18 Claims**





1. An electro-optic device comprising:

a Burrus-type light emitting diode having an active layer, the light emitting diode being operable to produce primary top emission of light perpendicular to said layer, and relatively low intensity secondary side emission in the plane of said layer;

drive means for applying current to drive the light emitting diode;

monitoring means located in the plane of the active layer for monitoring the secondary side emission and for generating an electrical analog of such monitored secondary side emission; and

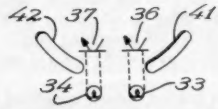
feedback means for applying said electrical analog to the drive means whereby to stabilize primary top emission from said light emitting diode.

4,284,885

OPTICAL POTENTIOMETER

Eugene T. Swensen, Golden Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 910,043, May 26, 1978, abandoned. This application Apr. 12, 1979, Ser. No. 29,250
Int. Cl.³ G01J *1/32*
U.S. Cl. 250—211 K **30 Claims**



1. An optical potentiometer comprising:

first and second variable light transmissive windows;

light source means for supplying light to one side of said windows;

first light responsive means positioned on the other side of said windows for receiving light emitted through said first window and second light responsive means mounted on the other side of said windows for receiving light emitted through said second windows, said first and second light responsive means mounted so that only one of said first and second light responsive means receives light at any time; and,

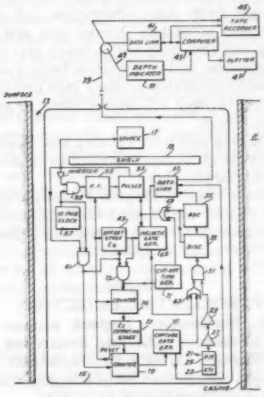
means for moving said first and second variable light transmissive windows past said first and second light responsive means.

4,284,886

RANDOM PULSING OF NEUTRON SOURCE FOR INELASTIC NEUTRON SCATTERING GAMMA RAY SPECTROSCOPY

Russel C. Hertzog, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 28,953
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—270 **17 Claims**



1. A method for logging a formation surrounding a borehole, comprising the steps of:

irradiating said formation with a succession of discrete bursts of fast neutrons, each burst having a variable time interval;

detecting radiation occasioned in said formation by said fast neutrons;

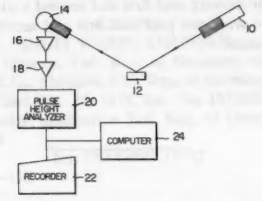
limiting the number of fast neutrons emitted during an individual burst by shortening the variable time interval of said individual burst as a function of the detected radiation during said individual burst; and

continuously varying the frequency of occurrence of said succession of discrete bursts to conform the relationship between said variable time interval and the following time interval before the next discrete burst to a predetermined relationship.

4,284,887
POLYCHROMATIC X-RAY SOURCE FOR DIFFRACTION APPARATUS USING POLYCHROMATIC X-RAYS

Sho Kusumoto; Yoshio Fukuda, both of Hitachi; Sadao Nemoto, Hitachiota, and Naoki Sakurama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,829
Claims priority, application Japan, Mar. 16, 1978, 53/29253
Int. Cl.³ G01N *23/20*; G21K *1/00*
U.S. Cl. 250—272 **28 Claims**



1. A polychromatic X-ray source used in a polychromatic X-ray diffraction apparatus, in which polychromatic X-rays are cast along a beam path upon a sample to be analyzed, the energies of the X-rays diffracted from the crystallographic planes of said sample are measured and the physical properties of said sample are detected on the basis of the measured energies, said polychromatic X-ray source comprising:

a container made of radiation shielding material and having an X-ray outlet channel through which the beam path passes;

a radionuclide contained in said container so as to emit radioactive primary rays;

target means mounted in said container so as to intercept the emitted rays from said radionuclide and thereby emit polychromatic secondary X-rays into said channel by acattering and absorbing said primary rays emitted from said radionuclide, said target means being a substance that scatters said radioactive primary rays emitted from said radionuclide through a Compton effect to produce polychromatic X-rays;

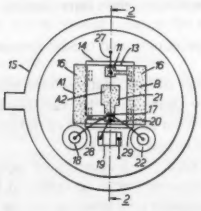
radiation shielding means for opening and closing said channel to the passage of rays traveling along said beam path toward said sample; and

Soller slit means in said beam path disposed in the vicinity of the outer end of said channel for collimating said polychromatic secondary X-rays along said beam path.

4,284,888
PYROELECTRIC DETECTORS

David Appleby, Northampton, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Oct. 18, 1979, Ser. No. 85,983
Claims priority, application United Kingdom, Oct. 24, 1978, 41669/78; Feb. 6, 1979, 04132/79
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—338 **34 Claims**

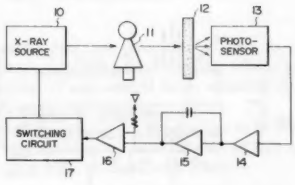


1. A pyroelectric detector comprising an element of pyroelectric material, said element having first and second regions, said first and second regions being connected in parallel with each other, said first region being active to infra-red radiation to produce a first output, said second region being relatively inactive to infra-red radiation so as to produce a null output, said element having a third region, said third region being connected in series with said first and second regions, said third region being oppositely polarized and active to infra-red radiation to produce a further output, wherein said first and further outputs are compared to each other, and are each compared to said null output, whereby to detect intrusion at both near and far ranges.

4,284,889
METHOD FOR RECORDING RADIATION IMAGE USING STIMULABLE PHOSPHOR

Hisatoyo Kato; Seiji Matsumoto, and Junji Miyahara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 1, 1979, Ser. No. 80,310
Claims priority, application Japan, Oct. 5, 1978, 53-122880; Oct. 5, 1978, 53-122882
Int. Cl.³ G01T *1/00, 1/11*; H05B *33/00*; H05G *1/30*
U.S. Cl. 250—355 **4 Claims**



1. A method of recording a radiation image on a recording material comprising the steps of exposing a stimulable phosphor to a radiation which carries image information to store the energy of the radiation in an imagewise pattern, stimulating the stimulable phosphor to cause the phosphor to emit light according to the energy stored therein, and recording a visible image on a photosensitive material by use of the light emitted by the stimulated phosphor wherein the improvement comprises steps of measuring the amount of light emitted by the stimulable phosphor by instantaneous emission when the phosphor is exposed to the radiation, and controlling the image recording system in accordance with the results of the measurement.

4,284,890
COINCIDENCE ANALYSIS CIRCUIT FOR POSITRON ANNIHILATION IMAGING DEVICE

Christopher J. Thompson, Montreal, Canada, assignor to Montreal Neurological Institute, Montreal, Canada

Filed Aug. 27, 1979, Ser. No. 70,066
Int. Cl.³ G01T *1/20*; G01N *21/00*
U.S. Cl. 250—363 S **1 Claim**

1. A coincidence detector circuit for receiving a plurality of pulsed input signals, pairs of which occur within a selected coincidence resolving time and require to be identified, said detector circuit comprising:

(a) input means for receiving pulsed input signals and converting them into level discriminated signals;

(b) a multiple bit delay to which the level discriminated signals are applied for generating output signals corresponding to and delayed with respect to the level discriminated signals;

(c) a multiple bit holding register connected to receive the delayed output signals from said multiple bit delay for generating holding register output signals which are the

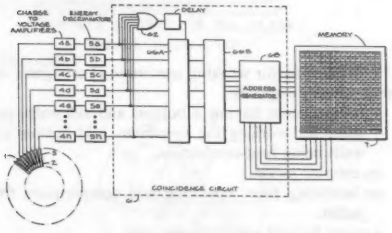
multiple bit delay outputs at the selected coincidence resolving time after the occurrence of any of the pulsed input signals;

(d) a plurality of priority encoders connected to receive output signals from said holding register, said encoders having a plurality of groups of output signals, each of which contains an address of the most significant input, and a further output signal when one or more input signals are present, and including a parity verification circuit for analyzing the further output signal and applying the groups of output signals and the further output signal as an overall output signal from the plurality of priority encoders when the parity is even;

(e) a multiple bit validation register receiving the overall output signal from said plurality of priority encoders, said validation register retaining even parity pairs of said pulsed input signals in an encoded form for a predetermined time;

(f) a high group priority encoder connected to receive output signals from said validation register, for generating an address during the predetermined time, following which the even parity pairs of output signals are received, said priority encoder having outputs which together contain the address of the most significant priority encoder receiving outputs from the holding register;

(g) a high group decoder connected to receive output signals from said high group priority encoder, said high group decoder regenerating the highest numbered input to said high group priority encoder;



(h) a high group mask connected to receive the regenerated inputs from said high group decoder, said high group mask eliminating the highest numbered input;

(i) a low group priority encoder connected to receive output signals from said high group mask and having outputs which together contain the address of a second priority encoder receiving outputs from the holding register, after an appropriate propagation delay;

(j) a low group decoder connected to receive the address from said low group priority encoder;

(k) a low group mask connected to receive output signals from said low group decoder and from said high group mask, for generating output signals;

(l) a further priority encoder, eliminating events in which an even number of detectors other than two respond, connected to receive the output signals from said low group mask; and

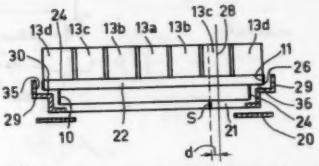
(m) a plurality of high and low group multiplexers receiving said plurality of groups of output signals from said validation register, said high group multiplexers having output address signals corresponding to the most significant input signals of said plurality of input signals, said low group multiplexers having output address signals corresponding to the least significant group of input signals of said plurality of input signals the outputs from said high group and low group priority encoders and high group and low group multiplexers generating a unique address for both detectors after an appropriate propagation delay.

4,284,891

GAMMA CAMERA

Jean Pergrale, Paris, and Michel Jatteau, Lesigny, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,456
Claims priority, application France, Dec. 5, 1978, 78 34169
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—363 S **3 Claims**



1. In a gamma camera which comprises:

a scintillation crystal having a first side and an opposite second side; an optical conductor having a first side disposed against the second side of the scintillation crystal and a second opposite side, a transverse dimension of the optical conductor being larger than a transverse dimension of the scintillation crystal so that a portion of the surface of the optical conductor extends beyond the periphery of the scintillation crystal; a network of photomultiplier tubes including peripheral photomultipliers having entrance faces situated adjacent the second side of the optical conductor, the entrance faces of the peripheral photomultiplier tubes projecting beyond the periphery of the scintillation crystal; aperture means for defining the useful field of the gamma camera disposed adjacent the first side of the scintillation crystal; and a metal housing which surrounds the optical conductor and the scintillation crystal; the improvement comprising:

diffuse light reflector means provided at least on the portion of the surface of the optical conductor which extends beyond the periphery of the scintillation crystal, the reflection and optical diffusing properties of the reflector being a function of the wavelength of the scintillation light, for compensating the signal/distance curves of the photomultiplier tubes so that the signal/distance curves for all photomultiplier tubes in the network substantially coincide for all scintillations occurring within the useful field of the gamma camera.

4,284,892

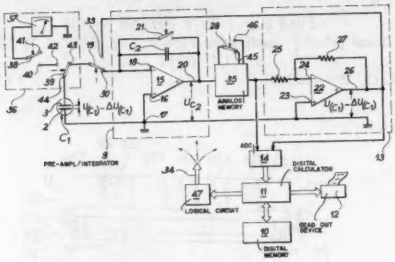
METHOD AND DEVICE FOR THE AUTOMATIC READING OF THE IRRADIATION DOSE OF A PORTABLE DOSIMETER

Michel Hulot, Montrouge, and Raymond Prigent, Marcoussis, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 5, 1979, Ser. No. 55,119
Claims priority, application France, Jul. 12, 1978, 78 20806
Int. Cl.³ H01J *39/29*
U.S. Cl. 250—388 **5 Claims**

1. A device for automatically reading the radiation dose of a portable dosimeter with an ionisation chamber, comprising: means for measuring the value of the ionisation chamber charge at each reading operation; means for storing the value of the charge of said ionisation chamber at each reading operation; means for calculating the radiation dose, at any moment, from one of the stored values and from the chamber charge value at said moment; and means for biasing the ionisation chamber, after a reading operation, with a voltage equal to the voltage corresponding to the just measured charge; wherein said means for storing the value of the charge of said ionisation

chamber at each reading operation are connected to said means for measuring the ionisation chamber charge, via an analogue-digital converter; and wherein said means for measuring the



ionisation chamber charge comprise a pre-amplifier-integrator for said ionisation chamber, designed according to the capacitive divisor constituted by a capacitor of said chamber and by an integrating capacitor of said pre-amplifier-integrator.

4,284,893

SELF-POWERED NEUTRON AND GAMMA-RAY FLUX DETECTOR

Colin J. Allan; Ross B. Shields, both of Deep River; Jerry M. Cuttler, Mississauga, and Gerard F. Lynch, Deep River, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Mar. 19, 1979, Ser. No. 21,481

Claims priority, application Canada, Apr. 20, 1978, 301514

Int. Cl.³ G01T *3/00*

U.S. Cl. 250—390 **1 Claim**

1. A self-powered neutron and gamma-ray flux detector, comprising:

(a) an emitter core,

(b) an emitter outer layer around the core,

(c) a collector around the emitter outer layer, and

(d) dielectric insulation electrically insulating the emitter outer layer from the collector,

and wherein the improvement comprises:

(e) the emitter core is of at least one material selected from the group consisting of nickel, iron, titanium and alloys based on these metals, and the emitter outer layer has a thickness in the range of the order of 0.03 mm to of the order of 0.062 mm and is of at least one material selected from the group consisting of platinum, tantalum, osmium, molybdenum and cerium.

4,284,894

COLD CHAMBER FOR THE WORKING OBJECTS FOR MICROSCOPIC AND ELECTRON MICROSCOPIC INVESTIGATIONS

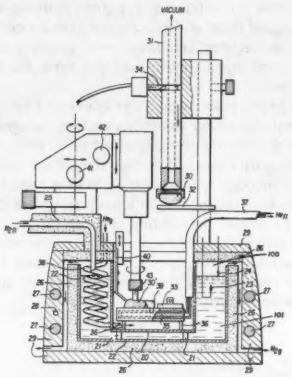
Hellmuth Sitte, Seefeld, Austria; Klaus Neumann, Bexbach, Fed. Rep. of Germany; Heinrich Kleber, Vienna, Austria, and Helmut Hassig, Homburg-Saar, Fed. Rep. of Germany, assignors to C. Reichert Optische Werke, AG, Vienna, Austria

Filed Feb. 19, 1980, Ser. No. 122,215

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906153

Int. Cl.³ G01N *21/00*

U.S. Cl. 250—443 **9 Claims**



1. A chamber for working specimens at cryogenic temperatures which comprises:

a compartment having a bottom and sidewalls providing space for working the specimens, said bottom and sidewalls being heat-conductive,

an exterior jacket,

an insulating liner separating said compartment from said jacket,

a cover for said compartment, and

a plural cryogen system, said system having a first cooling means containing a first liquid cryogen for cooling a first portion of said chamber, the first liquid cryogen having a first temperature, a second cooling means containing a second liquid cryogen for cooling a second portion of said chamber, the second liquid cryogen having a second temperature, said first temperature being lower than said second temperature, said first portion being proximate to the specimens and said second portion surrounding a substantial part of said first portion.

4,284,895

METHOD AND APPARATUS FOR TOMOGRAPHIC EXAMINATION OF AN OBJECT BY PENETRATING RADIATION

Ira L. Morgan, 10305B Golden Meadow Dr., Austin, Tex. 78758; E. C. George Sudarshan, 7012 Northledge Dr., Austin, Tex.; Alvin L. Mitchell, Austin, Tex.; James P. Coose, Austin, Tex.; Hunter D. Ellinger, Austin, Tex., and James W. Jagger, Austin, Tex., assignors to Ira Lon Morgan and E. C. George Sudarshan, both of Austin, Tex.

Filed Feb. 21, 1978, Ser. No. 879,439

Int. Cl.³ G01N *21/00*

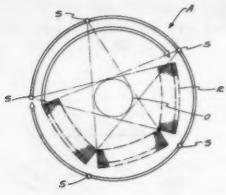
U.S. Cl. 250—445 T **36 Claims**

1. Apparatus for examining at least part of an object using penetrating radiation, such as X-rays or gamma rays, comprising:

(a) transmitting means for transmitting a plurality of photons

of penetrating radiation through the object along a plurality of paths; and

(b) detecting means disposed on the opposite side of the object from said transmitting means for detecting substantially all the plurality of individual photons emerging from the object along each of the plurality of paths, wherein said detecting means comprises scintillator means having a wall lining absorbent of penetrating ray photons so as to be self-collimating.



4,284,896

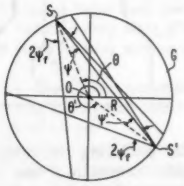
COMPUTERIZED TOMOGRAPHIC RECONSTRUCTION METHOD AND SYSTEM UTILIZING REFLECTION

James P. Stonestrom, Palo Alto, Calif., assignor to General Electric Company, Milwaukee, Wis.

Filed Aug. 24, 1979, Ser. No. 69,658

Int. Cl.³ A61B 6/00

U.S. Cl. 250—445 T **9 Claims**



1. In the method for constructing a two-dimensional representation of an object lying in a quasi-plane by positioning a radiation source for providing radiation in the form of a fan beam so that at least some of said radiation passes through said object; positioning detector means including an array of side by side detector elements opposite said source and aligned therewith and lying in said quasi-plane for detecting radiation in said quasi-plane not absorbed or scattered by said object; effecting relative rotation between said object and said source-detector combination about an axis of rotation such that said source and detector means remain in said quasi plane;

effecting measuring from said source at a plurality of angular positions during said rotation to obtain a multiplicity of measured data readings from said detector elements at each said projection;

and reconstructing a two-dimensional representation of the object by convolving said data without reordering of same, and scaling and back projecting same; THE IMPROVEMENT COMPRISING:

generating estimated detector data at desired projection angles by reflecting said measured detector data obtained during said projections; and performing said reconstruction step utilizing both said measured and said estimated detector data.

4,284,897

FLUORESCENCE DETERMINING MICROSCOPE UTILIZING LASER LIGHT

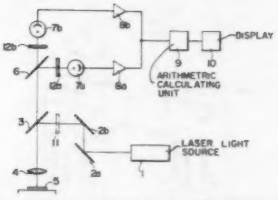
Ichiro Sawamura; Mamoru Aihara; Kazuhiko Nakamura, and Youichi Kondo, all of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 13, 1978, Ser. No. 885,640

Claims priority, application Japan, Apr. 30, 1977, 52-50558

Int. Cl.³ G01N 21/64

U.S. Cl. 250—461 B **5 Claims**



1. A microscope for scanning and determining the fluorescence of a cell comprised of a nucleus surrounded by cytoplasm, said microscope comprising:

a laser light source for emitting light having a spot size smaller than the nucleus of the cell to be scanned;

scanning means for directing the light from said light source onto the cell to spotwise irradiate the cell to produce fluorescence;

means for splitting the produced fluorescence into components of different wavelengths; and

detecting means for detecting the level of the fluorescence of the respective components.

4,284,898

HIGH VOLTAGE STABLE OPTICAL COUPLER

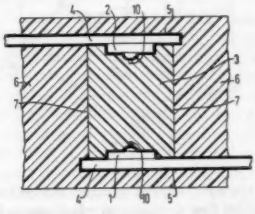
Gerfried Felkel, Neubiberg, and Joerg Klann, Laaber, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 31, 1979, Ser. No. 8,103

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806167

Int. Cl.³ G02B 27/00

U.S. Cl. 250—551 **10 Claims**



1. In a high voltage stable optical coupler of the type wherein a radiation transmitter and a radiation receiver are mounted on respective conductors, a transluscent coupling medium is disposed between the transmitter and the receiver, and a non-transluscent enveloping mass surrounds the coupling medium and has the conductors extending therethrough, the improvement therein comprising:

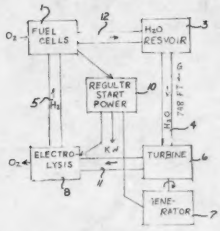
a radiation-permeable transluscent insulating film completely covering at

least one of the conductors.

4,284,899
GRAVITY FED POWER GENERATOR

Donald J. Bendiks, 1020 Water St., New Buffalo, Mich. 49117

Continuation of Ser. No. 18,605, Mar. 8, 1979, abandoned. This application Nov. 2, 1979, Ser. No. 90,673
Int. Cl.[3] F03B *13/06*; H02K *7/18*
U.S. Cl. 290—1 R 6 Claims

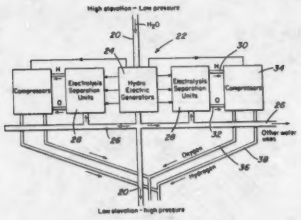


1. A power supply generator system comprising in combination a fuel cell within which hydrogen gas and oxygen are combined to produce water and electrical energy, an impulse turbine, said fuel cell being located above said turbine, said turbine including impeller means, conduit means extending downwardly from said fuel cells to said turbine for conducting by gravitational fall the water produced by said fuel cell to said turbine impeller means to cause rotation of the impeller means for providing electricity upon rotation of said impeller means, an electrolyzer means for producing hydrogen gas by the electrolysis of water, conduit means connecting said turbine with said electrolyzer means for conducting water from said turbine impeller means to the electrolyzer means to produce hydrogen, conduit means connecting said electrolyzer means with said fuel cell for conducing hydrogen to the fuel cell to produce water.

4,284,900
CLOSED LOOP ENERGY CONVERSION SYSTEM

Elton M. Botts, P.O. Box 615, Mattoon, Ill. 61938

Filed Mar. 7, 1979, Ser. No. 18,588
Int. Cl.[3] F03B *13/06*
U.S. Cl. 290—43 6 Claims

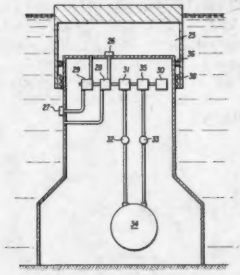


1. An energy system comprising water stored in means at a high elevation under low pressure, pipeline means for conveying the water to a lower elevation under high pressure, said pipeline means serving to maintain the water fresh and unpolluted and to reduce evaporative losses, at least one hydroelectric generating station in the pipeline means utilizing pressure differentials between the interior of the pipeline means and atmosphere to generate electrical energy, at least one electrolysis separation unit operably associated with said pipeline means, said at least one electrolysis separation unit serving to convert a portion of said water into hydrogen and oxygen gas, said at least one electrolysis separation unit utilizing and being operable by electrical energy supplied by said at least one hydroelectric generating station, compressor means for collecting and delivering said oxygen and hydrogen gas for a desired use, said compressor means also being operable by electrical energy supplied by said at least one hydroelectric generating station, whereby said water is used to create the electrical energy necessary for its own hydrolysis into oxygen and hydrogen gas.

4,284,901
APPARATUS FOR UTILIZING TIDAL VARIATION TO GENERATE ELECTRICITY

A. Marcel Giguere, 2625 Regina St., Apt.#1008, Ottawa, Ontario, Canada (K2B 5W8)

Filed Mar. 12, 1979, Ser. No. 19,414
Int. Cl.[3] F03B *13/12*
U.S. Cl. 290—53 2 Claims



1. Apparatus for producing electricity by harnessing the power of ocean tides comprising at least one power unit, said power unit in turn comprising:

a large column having an upper portion, said column being disposed in a vertical direction so that said column is substantially perpendicular to and the upper portion is generally below the surface of the ocean, said column being permanently fixed to the ocean bed and having a chamber therein;

a float having a chamber therein adjacent the center of gravity of the float, said float chamber being closed on top and of such size that the upper portion of said column is telescopically associated therewith so that the float may move vertically relative to said column and means associated with said float chamber and said column for providing sealed telescopic movement therebetween, said float having a buoyancy factor of twice its weight, a substantial portion of the float at all times being below the surface of the ocean;

means associated with said float chamber and said column chamber including conduit means and turbine means whereby movement of said float vertically upwardly and downwardly causes water to flow sequentially into said float chamber and from said chamber through said conduit means thereby driving said turbine means; and

electrical generating means operatively connected with said turbine means whereby said generator means is driven by said turbine means.

4,284,902

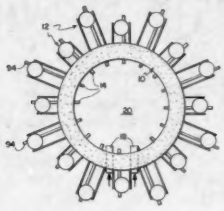
WAVE ACTION GENERATING SYSTEM

Peter M. Borgren, and Albert J. Amatuzio, both of Duluth, Minn., assignors to Hydrodynamic Energy Systems Corp., Superior, Wis.

Continuation-in-part of Ser. No. 98,214, Nov. 28, 1979. This application Mar. 7, 1980, Ser. No. 127,990

Int. Cl.[3] F03B *13/12*

U.S. Cl. 290—53 14 Claims



1. A hydrodynamic electric generating system for producing electrical energy from wave action, comprising

(a) support means mounted on the floor of a body of water, said support means being mounted relative to said body of water so as to separate the same into a relatively shallow reservoir confined by said support means and an open body of water at normal water level and subjected to wave action, the difference in water levels between said confined shallow reservoir and said open body of water creating a controllable hydrostatic pressure head,

(b) a plurality of pumps mounted on said support means in said open body of water, each of said pumps including a housing, a piston mounted for reciprocal movement in said housing and forming upper and lower pump chambers, and a piston rod extending vertically in sealed relation through said pump housing and secured to said piston,

(c) pipe means associated with each pump and communicating with said reservoir, the bottom chamber of said pump and said open body of water,

(d) valve means to control water flow first from said reservoir to said lower pump chamber during upward movement of said piston in response to wave action, and then from said lower chamber to said open body of water,

(e) float means operatively connected to the upper end of said piston rod of each pump and vertically positioned so as to be exposed to wave action,

(f) counterweight means secured to the bottom of said piston rod for biasing the same downwardly,

(g) frame means secured to said support means for guiding the vertical movement of said float means, and

(h) electric generating means mounted in said support means in a position substantially below the water level in said shallow reservoir,

whereby the vertically upward wave action causes said floats and thus said pistons to move upwardly creating an area of lower pressure in said lower pumping chambers thereby inducing water flow from said reservoir through said pipe means into the lower pumping chambers, the cessation of upward wave action force resulting in said counterweights vertically moving said pistons downwardly thereby pumping water from said lower chambers through said pipe means into said open body of water, the water pumped into said open body of water from said plurality of pumps maintaining a hydrostatic pressure head of sufficient magnitude to force water through said electric generating means to produce electrical energy, the water passing through said electric generating means in turn flowing into said reservoir to replenish the water previously drawn therefrom during vertically upward wave motion.

4,284,903

DEVICE FOR ADJUSTING THE INCLINATION OF MOTOR VEHICLE HEADLAMPS

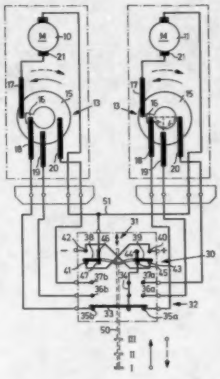
Erich Mutschler; Hans Prohaska, both of Bietigheim-Bissingen; Franz Schreiber, Kirchheim; Karl-Friedrich Schubert, and Adam Weber, both of Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,734

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751728

Int. Cl.[3] H01H *21/00*; G05D *3/10*

U.S. Cl. 307—10 LS 5 Claims



1. A device for adjusting the inclination of vehicular headlamps comprising:

at least one direct current motor coupled to at least one of said headlamps;

a power source having first and second terminals of opposite polarity;

an operating switch assembly including a multistage adjusting switch having a bridging contact;

a first plurality of position switches each serially connectable with said motor and said bridging contact to interrupt current to said motor when said headlamps are at predetermined positions;

characterized in that:

said operating switch comprises: a switch housing; a reversing switch having input terminals connected to said first and second terminals, a first output terminal connected to said motor, and a second output terminal connected to said bridging contact; said bridging contact being operable to selectively connect each of said plurality of position switches to said reversing switch; said reversing switch when operated in a first direction being operable to connect said first terminal to said first output terminal, and said second terminal to said second output terminal and when operated in a second direction being operable to connect said second terminal to said first output terminal and said first terminal to said second output terminal; a switching member carrying said bridging contact; a switch shaft for adjusting said switching member, said switching member being operatively connected with one switching element of said reversing switch; means for connecting said switching element and said switching member in a force-locking manner when the direction of motion of the switch shaft is reversed; said connecting means comprising a plurality of stops disposed on said housing, a first coupling element between said switching element and said housing and a second coupling element between said switching element and said switching member, said first coupling element being adapted to selectively engage said plurality of stops, and said second

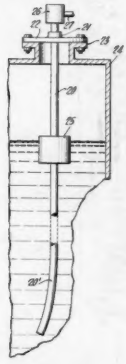
coupling element being adapted to transmit a greater degree of motion than said first coupling element.

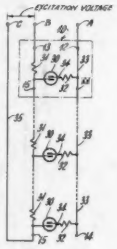
4,284,904

ENCAPSULATED MAGNETICALLY SENSITIVE CIRCUIT ELEMENTS FOR DEPTH-INDICATING PURPOSES OR THE LIKE

Roland G. Tetro, Bristol, Conn., assignor to Transamerica DeLaval Inc., Princeton, N.J.

Filed Jun. 5, 1978, Ser. No. 912,218
Int. Cl.³ H01H *35/18*
U.S. Cl. 307—118 **27 Claims**





1. An encapsulated circuit element adapted to define a single unit of length when interconnected in longitudinal succession with a plurality of said elements to form an elongate array representing a succession of a corresponding plurality of said units of length, said encapsulated circuit element comprising an elongate generally rectangular-prismatic encapsulating body of substantially said unit length and having two equally spaced stiffly complaint terminals extending free of said body at each of its opposite longitudinal ends, all said terminals being bent to extend parallel to each other and in the same direction normal to and beyond the plane of one of the elongate surfaces of said body, both terminal bends at one end being spaced by said unit length from both terminal bends at the other end, an electrically conductive connection within said body between one terminal at one end and one terminal at the other end, an electrically resistive connection within said body between the other terminal at one end and the other terminal at the other end, and electrical-connection means serially including a magnetic-reed switch within said body and interconnecting the respective terminals at one end of said body.

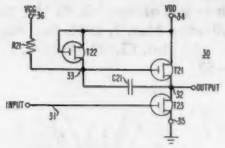
4,284,905

IGFET BOOTSTRAP CIRCUIT

Walter Rosenzweig, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 31, 1979, Ser. No. 44,397
Int. Cl.³ H03K *19/094, 19/003, 19/20*
U.S. Cl. 307—482 **8 Claims**

1. An IGFET driver circuit comprising a first voltage supply terminal adapted to carry a first bias voltage, an output node, a control node, a first IGFET having its channel coupled between the first voltage supply terminal and the output node, the gate of the first IGFET being coupled to the control node, a second IGFET having its channel coupled between the first voltage supply terminal and the control node, capacitance means coupled between the output node and the control node, a second voltage supply terminal adapted to carry a second bias voltage, at least one input terminal for receiving an input signal, switching means coupled between the output node and the second voltage supply terminal, the switching means responsive to the input signal at the input terminal for providing a conducting path between the output node and the second voltage supply terminal,



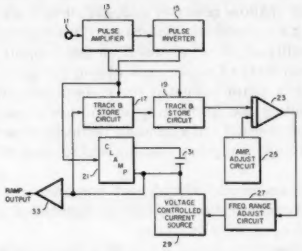
characterized in that there are included a third voltage supply terminal adapted to carry a third bias voltage of greater magnitude than the first bias voltage, and substantially fixed value resistance means coupled between the third voltage supply terminal and the control node.

4,284,906

CONSTANT AMPLITUDE VARIABLE FREQUENCY SYNCHRONIZED LINEAR RAMP GENERATOR

Urbano Manfredi, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1979, Ser. No. 81,310
Int. Cl.³ H03K *5/00, 5/08*
U.S. Cl. 307—228 **13 Claims**



1. A constant amplitude, variable frequency, synchronized, linear ramp generator comprising in combination:

trigger pulse source means having first and second outputs for providing a trigger pulse signal, and an inverted trigger pulse signal in response to a sync pulse signal;

means for storing an electric current;

current source means having an output effectively connected to said current storage means and an input for supplying said electric current to said current storage means at a predetermined rate;

clamping means having an input connected to the second output of said trigger pulse source means, and a pair of outputs effectively connected across said current storage means for discharging, in response to the said inverted trigger pulse signal, said charge storage means, and thereby cause a sawtooth waveform signal having a plurality of sawtooth waveforms to appear at the first of the pair of outputs thereof;

first monitoring means having a first input effectively connected to the first of the pair of outputs of said clamping means, a second input connected to the second output of said trigger pulse source means, and an output for tracking said sawtooth waveform signal and storing, in response to said inverted trigger pulse signal, representations of said tracked sawtooth waveform signal;

second monitoring means, having a first input connected to

the output of said first monitoring means, a second input connected to the first output of said trigger pulse source means, and an output for sampling the representations of said sawtooth waveform signal stored by said first monitoring means and storing, in response to said trigger pulse signal, the sampled representations of said sawtooth waveform signal; and

integrating means having an input connected to the output of said second monitoring means and an output effectively connected to the input of said current source means for providing a feedback control signal in response to the sampled representations of said sawtooth waveform signal stored by said second monitoring means, said feedback control signal to control the rate at which said current source means supplies charge to said current storage means.

4,284,907

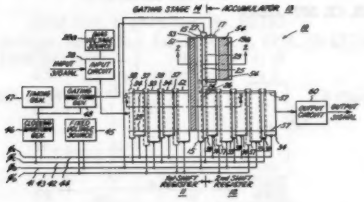
CHARGE TRANSFER FILTER

Thomas L. Vogelsong, and Jerome J. Tiemann, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,777

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78;* **H03H** *15/02*

U.S. Cl. 307—221 D **3 Claims**



1. In combination,

a substrate of semiconductor material of one conductivity type,

means for forming a charge storage region in said substrate and for transferring charge therein including a first electrode of generally elongated outline insulatingly overlying said storage region, said first electrode forming with said substrate a first capacitor,

said first electrode having a length in the direction of charge transfer thereunder which is substantially smaller than the width thereof,

a first region of opposite conductivity type and high conductivity in said substrate, said first region being of elongated configuration and having a long side contiguous with a long side of said first storage region,

a second region of opposite conductivity type and high conductivity in said substrate, said second region being of elongated configuration and having a long side spaced a short distance from and parallel to another long side of said first storage region,

a second capacitor having a pair of terminals, one of said terminals connected to said second region of opposite conductivity type and the other of said terminals connected to said substrate,

said first and second capacitors forming a charge storage cell,

means for providing a sequence of first quantities of charge, each quantity corresponding to a respective value of a series of successive values of a signal,

introducing means including said first electrode for introducing serially each of said quantities of charge of said sequence into said storage cell,

removing means including said first electrode for removing periodically a fixed fraction less than one of the total of said first quantities of charge contained in said storage cell to provide a sequence of second quantities of charge, said fixed fraction of charge periodically removed from said storage cell by said removal means being determined by the ratio of the capacitance of said first capacitor to the total capacitance of said first and second capacitors.

4,284,908

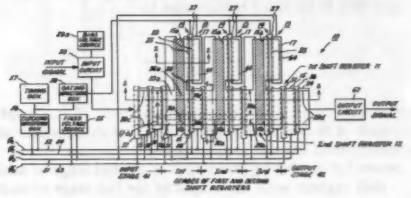
CHARGE DOMAIN FILTER WITH SINGLE TRANSMISSION ZERO

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1980, Ser. No. 153,687

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78;* **H03H** *15/02*

U.S. Cl. 307—221 D **2 Claims**



1. In combination,

a substrate of semiconductor material of one conductivity type having a major surface,

means forming a plurality of N charge storage cells adjacent said major surface of said substrate, each storage cell including a first electrode and a second electrode, said first and second electrodes insulatingly overlying said storage cell, said first electrode and said substrate forming a first capacitor having a first capacitance, said second electrode and said substrate forming a second capacitor having a second capacitance,

a first shift register formed in said substrate having N serial coupled stages, each stage including a respective first charge storage region in said substrate underlying a respective one of said first electrodes,

a second shift register formed in said substrate having N serial coupled stages, each stage including a respective first charge storage region in said substrate,

first means for sequentially transferring packets of charge at one frequency from first charge storage region to first charge storage region of the stages of said first shift register,

second means for sequentially transferring packets of charge at said one frequency from first charge storage region to first charge storage region of the stages of said second shift register,

means for providing a first sequence of packets of charge, each packet representing a respective sample of an input signal, successive packets occurring at said one frequency,

means for dividing each of said packets of charge of said first sequence into a first part and a second part, the ratio of said first part to said second part being equal to a first fixed value,

means for applying sequentially each of said first parts of said packets of said first sequence to the first stage of said first shift register and for applying sequentially each of said second parts of said packets of said first sequence to the first stage of said second shift register,

a plurality of combining means, each for combining the charge packet in the first charge storage region of a respective stage of said first shift register with the charge packet in an associated second charge storage region and for dividing the combined packet of charge into two portions over one part of a cycle of said first charge transferring means, a first portion of said combined packet being stored in the first charge storage region of a stage of

said first shift register and a second portion of said combined pocket being stored in the second charge storage region associated therewith, the ratio of said first portion of charge to the combined packet of charge being equal to a second fixed value, said second fixed value being equal to the ratio of said first capacitance of the sum of said first capacitance and said second capacitance,

the frequency response of each of the stages of said first shift register decreasing as the frequency of the input signal thereto increases and the shift in phase of the frequency response of each of the stages of said first register increasing as the frequency of the input signal thereto increases,

said second fixed value providing a phase shift at a predetermined angular frequency ω_z which is equal to π radians divided by an integer, said integer being equal to N, the number of stages in said first and second shift registers,

said first fixed value being equal to

$$\frac{1}{1 + /H_N(\omega_z)/}$$

where $|H_N(\omega_z)|$ is the absolute magnitude of the amplitude response of N cascaded stages of said first shift register at said predetermined angular frequency ω_z,

means for combining the output of the last stage of said first shift register with the output of the last stage of said second shift register, whereby a resultant output is obtained having zero amplitude at angular frequency ω_z.

4,284,909

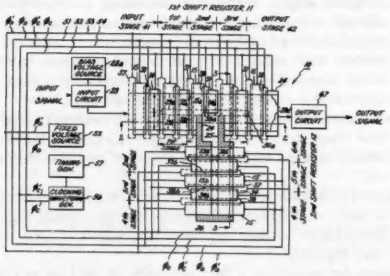
CHARGE DOMAIN FILTER WITH A PLURALITY OF TRANSMISSION ZEROS

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1980, Ser. No. 153,702

Int. Cl.³ G11C *19/28;* H01L *29/78;* H03H *15/02*

U.S. Cl. 307—221 D **4 Claims**



1. In combination,

a first shift register having a plurality of M stages, where M is an integer, each stage including a respective first charge storage region,

a second shift register having a plurality of N stages where N is an integer greater than M, each stage including a respective first charge storage region,

first means for sequentially transferring packets of charge at one frequency from first charge storage region to first charge storage region of the stages of said first shift register,

second means for sequentially transferring packets of charge at said one frequency from first charge storage region to first charge storage region of the stages of said second shift register,

means providing a first sequence of packets of charge, each packet representing a respective sample of an input signal, successive packets being provided at said one frequency,

means for dividing each of said packets of charge of said first sequence into a first part and a second part, said first and second parts being equal,

means for applying each of said first parts of said packets of said first sequence to the first stage of said first shift register and for applying each of said second parts of said packets of said first sequence to the first stage of said second shift register,

the product of the difference of said integers N and M and a predetermined frequency of said input signal being equal to an odd integer of one-half of said one frequency,

means for combining the output of the last stage of said first shift register with the output of the last stage of said second shift register, whereby a resultant output is obtained having zero response at odd multiples of said predetermined frequency.

4,284,910

ADDRESS BUFFER FOR A MOS-MEMORY MODULE

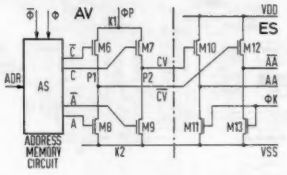
Ruediger Hofmann, Munich, and Paul W. von Basse, Wolfratshausen/Farchet, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,524

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840329

Int. Cl.³ H03K *5/00*

U.S. Cl. 307—238.4 **4 Claims**



1. An address buffer in MOS technology comprising: an address memory circuit having an address input driven via a transfer signal, two complementary address outputs, and two complementary high signal level outputs; an isolating amplifier; a following-connected output stage; the isolating amplifier being driven via a control clock pulse and having outputs for complementary control signals; the isolating amplifier having two parallel paths each comprising two transistors, said parallel paths being connected to the control clock pulse via a first common node and being connected to a base voltage source via a second common node; a first transistor of each parallel path being driven by a respective one of the two high signal level outputs of the address memory circuit; and a second transistor of each parallel path being driven by a respective one of the two address outputs of the address memory circuit, the high signal level output driving the first transistor of one of the paths being the inverse of the address output driving the second transistor of the same path.

4,284,911

SWITCHING NETWORK

Edward F. McKeon, Short Hills, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,024

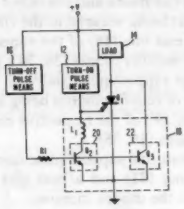
Int. Cl.³ H03K *17/72*

U.S. Cl. 307—252 C **3 Claims**

1. In a switching network of the type wherein at least one GTO device is rendered conductive or non-conductive to control the flow of current through a load, the improvement comprising:

first and second transistors, said first transistor having its main conduction path connected to conduct current away from the gate of the GTO device, said second transistor

having its main conduction path connected in parallel with the main conduction path of the GTO device, said



first and second transistors having their control electrodes commonly connected to receive the turn-off signal.

4,284,912

SWITCHING CIRCUITS FOR DIFFERENTIAL AMPLIFIERS

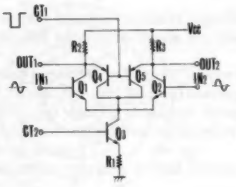
Hitoshi Fujisaki; Hideo Onodera, and Yasuhiro Toyomura, all of Kodaira, Japan, assignors to Hitachi Denshi K.K., Chiyoda, Japan

Filed Nov. 1, 1979, Ser. No. 90,147

Claims priority, application Japan, Nov. 9, 1978, 53/137267; Mar. 15, 1979, 54/29356

Int. Cl.³ H03K *17/60*

U.S. Cl. 307—255 **4 Claims**



1. A switching circuit for a differential amplifier including first and second transistors of one conductivity type with their emitter electrodes commonly connected; said switching circuit comprising third and fourth switching transistors having a conductivity type opposite to that of said first and second transistors, the base electrodes of said third and fourth transistors being connected commonly;

means for connecting the collector electrodes of said third and fourth transistors to the commonly connected emitter electrodes of said first and second transistors;

means for connecting the collector electrodes of said first and second transistors to the emitter electrodes of said third and fourth transistors respectively; and

means for applying a switching signal to the base electrodes of said third and fourth transistors so as to switch the output signals produced by the first and second transistors.

4,284,913

COOLING ARRANGEMENT FOR AN INTEGRATED DRIVE-GENERATOR SYSTEM

Scott B. Barnhardt, Shawnee Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1979, Ser. No. 44,299

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—54 **3 Claims**

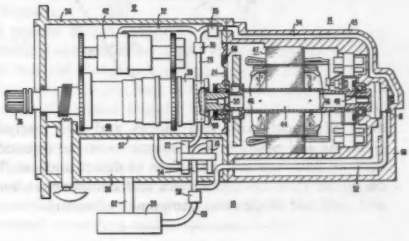
1. An integrated drive generator system comprising:

a constant speed drive unit, said unit including an input shaft, an output shaft, means linked to said input and output shafts for driving said output shaft at constant speed for varying input shaft speeds, and a casing for housing said shafts and constant speed drive means;

an electrical generator unit having a rotatable shaft linkable to said constant speed output shaft and a casing for housing said rotatable shaft, said generator casing being attachable to said drive unit casing and having an operational lubrication-coolant fluid level associated therewith;

means for supplying lubrication-coolant fluid to said drive unit and said generator unit;

a scavenging pump for scavenging heat laden lubrication-



coolant fluid from the casings' interiors, said scavenging pump being in fluid communication with said supplying means and located within said generator casing;

means for cooling the heat laden lubrication-coolant fluid prior to its entry into the drive and generator units; and

barrier means for obstructing debris migration between the attachable units, said barrier means including means for providing fluid communication between the units comprising a plurality of baffles cooperatively disposed to obstruct migration of solid debris between units and promote fluid transmission therebetween, said baffles being disposed above the normal, operational lubrication-coolant fluid level.

4,284,914

PROTECTIVE COVER CAP FOR AN AUTOMOTIVE-TYPE ALTERNATOR-RECTIFIER COMBINATION

Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Karl Kleebaur, Allmersbach; Christoph Kugel, Stuttgart; Johann Künz, Sersheim; Werner Lemke, Bietigheim-Bissingen, and Rüdiger Sohnle, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,112

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848410

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 D **10 Claims**

1. For and in an alternator rectifier combination, particularly for automotive use, having

an alternator stator housing;

a shaft (**16**);

an end plate (**12**) secured to the housing;

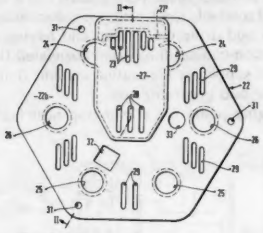
bearing means (**15**) secured in said end plate and journaling the shaft;

rectifier diodes (**14**) supported by said end plate to form a combination end plate—rectifier diode support plate assembly (**12, 13, 14**), said end plate providing heat dissipation and cooling for said rectifier diodes;

wherein an air flow (A) is induced in axial direction of the alternator to provide for cooling of said combination end plate—diode support plate assembly, and further for cooling of component elements of the alternator which, in operation, require cooling;

and a protective cover cap and air flow directing element, comprising, in accordance with the invention,

a cup-like structure (**22**) formed with openings (**23, 24, 25, 26, 28, 29**) therein located on said assembly in essentially



axial alignment with said diodes and said component elements and positioned in advance—in the direction of said air flow—of said end plate to direct said axially induced air flow on said diodes and component elements and cool said diodes and component elements.

4,284,915

MOBILE ALTERNATOR-RECTIFIER COMBINATION CONSTRUCTION, PARTICULARLY FOR AUTOMOTIVE VEHICLES

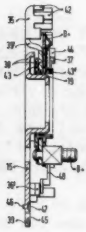
Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Rüdiger Sohnle, Stuttgart; Christoph Kugel, Stuttgart; Johann Künz, Sersheim; Werner Lemke, Bietigheim-Bissingen, and Karl Kleebaur, Allmersbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,113

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847502

Int. Cl.[3] **H02K** *11/00*

U.S. Cl. 310—68 D **28 Claims**



1. Mobile alternator-rectifier combination construction, particularly for automotive vehicles, having

a frame structure (**11**);

a stator (**23, 24**) secured to the frame structure and having an armature winding (**24**);

a rotor (**26, 27, 28**) having a rotor shaft (**25**);

two bearings (**18, 21**) journaling the rotor;

an end cover (**13**) secured to one end of the frame and retaining one (**18**) of the two bearings, and extending transversely to the axis of rotation of the shaft;

and two groups of rectifier diodes (**36, 36'**) electrically connected to the armature winding,

two membrane-like disk-shaped sheet metal support plates (**15, 35**) positioned adjacent the axial end of the shaft remote from said end cover (**13**);

each support plate including

an essentially ring-shaped portion (**38**) surrounding the shaft and radially projecting fins (**39, 39'**) defining gaps therebetween;

at least one (**15**) of the disk-shaped support plates being secured to the frame and the other (**21**) of said two bearings (**18, 21**) being secured to the ring-shaped portion (**38**) of said at least one (**15**) of the support plates (**15, 35**);

one group of rectifier diodes (**36, 36'**), each, being secured to a respective support plate and with the diodes (**36, 36'**) of the groups of rectifier diodes being located on the projecting fins (**39, 39'**) of the respective disk-shaped sheet metal support plates (**15, 35**);

whereby at least one support plate forms the support for the other bearing (**21**) and a heat sink and heat dissipation element for the diodes thereon;

electrically insulating means (**43, 43'**) interposed between said support plates including electrical terminal holding means (**49**); and

resilient contact rails (**48**) forming connection means between the diodes of the groups of diodes (**36, 36'**), resiliently pressing against the respectively connected diodes on the associated respective fins.

4,284,916

ROTARY SIGNAL GENERATOR

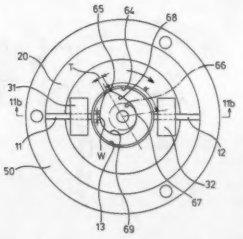
Keiichi Onodera, and Hiroshi Yamaura, both of Kawasaki, Japan, assignors to Fuji Electric Co. Ltd., Kanagawa, Japan

Filed Nov. 7, 1978, Ser. No. 958,558

Claims priority, application Japan, Nov. 10, 1977, 52/135072

Int. Cl.[3] **H02K** *11/00*

U.S. Cl. 310—70 R **4 Claims**



1. A rotary signal generator comprising a rotary magnetic pole member which is provided with a single protruded end located at the longest radial distance and with a single minimum radius portion located at the minimum radial distance and a plurality of stationary magnetic pole members uniformly spaced about said rotary magnetic pole member said protruded end and minimum radius portion being connected with a curved surface, each of said stationary magnetic pole members being energized by a permanent magnet and provided with a pick-up coil which generates an output signal when the protruded end of the rotary magnetic pole member traverses the end of the stationary pole, the angle formed by the protruded end and the minimum radius portion in the direction of rotation being not more than 120°.

4,284,917

ELECTRIC MOTOR CONSTRUCTION

Mark Yassemi, Glendale, Calif., assignor to Excellon Industries, Torrance, Calif.

Filed Mar. 29, 1979, Ser. No. 25,280

Int. Cl.[3] **H02K** *5/00*

U.S. Cl. 310—89 **14 Claims**

1. An electric motor comprising

a housing means, said housing means including first and second housing members,

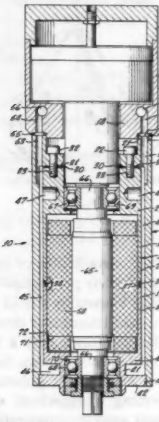
said first and second housing members having circumfer-

ential walls, said circumferential walls having end portions telescoped together,

said first and second housing members defining first and second bearing support surfaces, respectively,

said first and second bearing support surfaces being axially aligned,

and adhesive means interposed between said end portions for bonding said circumferential walls together so that said first and second housing members form a unitary structure, there being no fastener means for securing



said first and second housing members together so that said first and second housing members are substantially undistorted,

a first bearing carried by said first bearing support surface,

a second bearing carried by said second bearing support surface, said first and second bearings being axially aligned by said first and second bearing support surfaces,

a field in said housing means,

and an armature assembly rotatable in said first and second bearings.

4,284,918

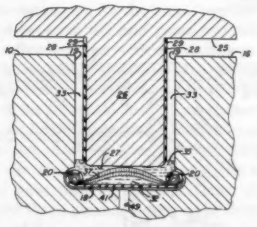
POROUS INTERFACE STABILIZED LIQUID METAL CURRENT COLLECTOR

Michael J. Cannell, Annapolis, Md.; Slade L. Carr, Jr., Voorheesville, N.Y.; Howard O. Stevens, Severna Park, and Harold Surosky, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1979, Ser. No. 86,181

Int. Cl.³ H02K *31/00*

U.S. Cl. 310—178 **14 Claims**



1. A homopolar electrical machine comprising:

a stator having an inner surface with channels formed therein, each said channel including radial sidewalls and a bottom surface portion;

a rotor concentrically positioned within said stator, said rotor including outwardly projecting flanges, each of said flanges extending into a respective channel in said stator and being spaced from said radially extending sidewalls and said bottom portion;

liquid metal disposed in each said channel for making electrical contact between said flange and said channel;

a porous means removably secured in said channels and immersed in said liquid metal for maintaining said liquid metal in contact with said flanges;

means for removably securing said porous means in said channels;

said porous means comprises a porous, compliant strip of resilient material and a support means supporting said strip of material along its longitudinal edge portions such that the central longitudinal portion of said strip of material is resiliently biased toward the peripheral surface of said flange;

said strip of material comprises a porous material of woven filaments to provide a plurality of interstices therein and said support means comprises a holder element for said material having longitudinal edge portions crimped around respective said longitudinal edge portions of said strip of material to maintain said central portion in the biased position; and

said means for securing said porous means includes grooves formed in opposite sidewalls of said channels and said longitudinal crimped edges of said holder element are dimensioned to slidably engage said grooves and to maintain said strip of material in a fixed position.

4,284,919

POLE CHANGEABLE THREE PHASE WINDING

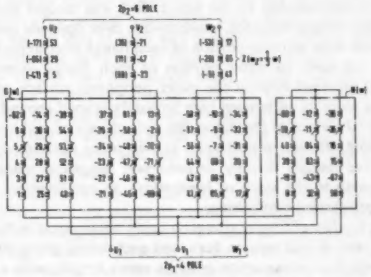
Herbert Auinger, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 76,689

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842286

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—198 **6 Claims**



1. In a pole-changeable three-phase winding for a fractional pole pair number ratio of primary p_1 and secondary pole pair numbers p_2 according to $p_1:p_2=(3m\pm1):3n$ (m, n being positive integers), with G base winding branches operative in both pole number levels, one third of which are associated with all three phases and with N null winding branches operative only at the primary pole pair number p_1, the division into G base winding and N null winding branches per phase occurring according to $G+N=2p_1/t$, wherein t is an integral divisor of $2p_1$ and G is divisible by the number three, the improvement comprising a reduction in the number coils in the G base winding branches and in the N null winding branches of the individual phases predetermined increase of the winding factor and a

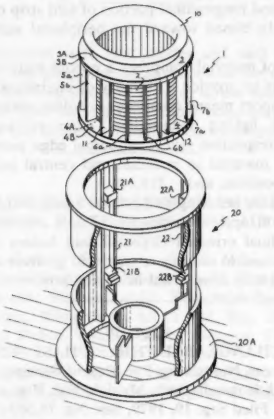
number of additional coils disposed between the terminals for the secondary pole pair number p_2 and the coil-reduced G base winding branches as additional null winding branches Z, the number of additional coils being equal to the reduction in the number of coils.

4,284,920

DYNAMOELECTRIC MACHINE STATOR ASSEMBLY

Donald A. Nelson, Scotia, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,662
Int. Cl.³ H02K *1/06*
U.S. Cl. 310—217 **7 Claims**



1. A dynamoelectric machine stator core assembly comprising a stack of generally flat, insulated metal laminations arranged in mutually facing relationship to define a bore for receiving a rotor adapted to be mounted within the bore in rotatable relationship to the stator, first and second annular clamping flanges mounted, respectively, over opposite ends of said stack with an inner portion of each flange overlapping the stack, and with an outer portion of each flange extending radially outward beyond the outer peripheral surface of the stack, a plurality of tension bars arcuately spaced around said peripheral surface of the stator, the ends of each of said tension bars being affixed, respectively, to said outer portions of the respective flanges thereby to hold said flanges in clamping relationship to the stack of laminations, in combination with the improvement comprising:

a. a plurality of torque ribs each being about equal in length to one of said tension bars, and each being generally V-shaped in cross-section over its entire length, with a key portion defined by the outer surface of the apex thereof,

b. a plurality of arcuately spaced positioning means defined on the outer peripheral surface of said stack, each of said positioning means being effective to engage therewith one of said torque rib key portions, thereby to prevent relative movement between the key portion and an adjacent positioning means,

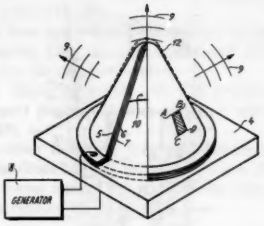
c. the ends of each of said torque ribs being mounted, respectively, in fixed relationship to the outer portion of the respective clamping flanges, and the key portions of each of the torque ribs being positioned, respectively, in engagement with one of said positioning means, thereby to rigidly and tightly secure the stator laminations against rotation relative to said flanges.

4,284,921

POLYMERIC PIEZOELECTRIC TRANSDUCER WITH THERMOFORMED PROTUBERANCES

Claire Lemonon; Francois Micheron, and Pierre Wang, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 15, 1978, Ser. No. 961,013
Claims priority, application France, Nov. 17, 1977, 77 34589
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 **6 Claims**



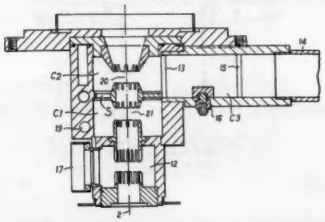
1. A transducer device using a film of polymeric material capable of showing piezoelectric properties when it is strained in its plane and electrically biassed by a field applied in a direction normal to its faces, said transducer device comprising at least one transducer element formed by a least one thermoformed protuberance created in said film; the strained wall of said protuberance being electrically polarized and disposed between electrodes forming a capacitor; said protuberance being formed by adjacent annular corrugations and a central dome; said protuberance forming a diaphragm; the sides of said corrugations being electrically biassed by oppositely directed electrical fields; two sets of electrodes being deposited on said protuberance; one of said sets covering the faces of said annular corrugations and the other of said sets covering the faces of said central dome; said diaphragm being mechanically coupled with an electromechanical transducer; said electromechanical transducer being a loudspeaker motor driving a cone surrounding said central dome; said diaphragm acting as a suspension for the cone and as a means for detecting its movements.

4,284,922

LINEAR BEAM MICROWAVE AMPLIFIER HAVING SECTION COMPRISING THREE RESONANT COUPLED CIRCUITS TWO OF WHICH ARE RESONANT CAVITIES WHICH INTERACT WITH THE BEAM

Dudley Perring, Charvil; Michael J. Smith, Chalfont St. Giles, and John P. Randall, Hillingdon, all of England, assignors to EMI-Varian Limited, Hayes, England

Filed Sep. 5, 1979, Ser. No. 72,678
Claims priority, application United Kingdom, Sep. 6, 1978, 35769/78
Int. Cl.³ H01J *25/10*
U.S. Cl. 315—5.39 **30 Claims**



1. An output section for a microwave amplifier for operating

with a predetermined mid-band frequency and having a linear electron beam path for a beam of predetermined velocity in the output section comprising:

a first resonant cavity defining a portion of the beam path and adapted to be coupled to a preceding section of the amplifier only via the beam, the cavity being arranged to interact with the beam,

a second resonant cavity defining a succeeding portion of the beam path and adapted to be coupled to a succeeding section of the amplifier only via the beam, the cavity being arranged to interact with the beam,

the section having no other resonant cavities defining portions of the beam path,

a third resonant cavity,

the cavities being dimensioned for stable operation of the output section and having coupling means adapted to facilitate the said stable operation, the coupling means comprising

a first coupling coupling the first and second cavities other than along the beam path but not coupling the third and first cavities,

a second coupling coupling the third cavity to the second cavity but not coupling the third and first cavities, and

a third coupling for coupling the third cavity to an output transmission line.

4,284,923

ION BEAM BUNCHER—DEBUNCHER

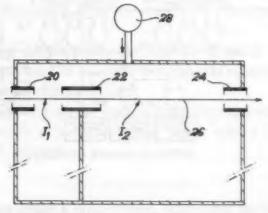
Jacques Pottier, Orsay, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 13, 1979, Ser. No. 93,217

Claims priority, application France, Nov. 23, 1978, 78 33103

Int. Cl.³ H01J *23/20*

U.S. Cl. 315—5.51 **2 Claims**



1. An ion beam buncher—debuncher of the type having a resonant structure supplied by a high frequency or hyperfrequency generator, said structure comprising a cylindrical wall closed by two lateral faces respectively traversed by a supply pipe and a discharge pipe for the beam, together with a sliding tube arranged between the said pipes and defining with the supply pipe a first gap and with the discharge pipe a second gap, the ion beam being introduced into the said structure by the supply pipe firstly undergoing in the first gap a first action on the part of the electrical field therein, then traversing the sliding tube and finally undergoing in the second gap a second action on the part of the electrical field therein and leaving the structure by the discharge pipe, wherein the supply and discharge pipes have different cross-sections, the sliding tube having a flared shape passing from a small cross-section equal to that of one of the pipes to a large cross-section equal to that of the other pipe. one of the two gaps affecting the ion beam with a substantial weaker electric field than that affected by the other gap.

4,284,924

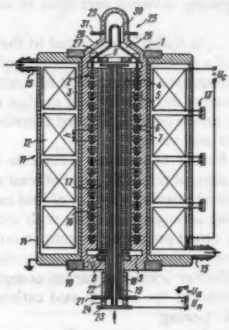
MICROWAVE MAGNETRON-TYPE DEVICE

Jury I. Dodonov, Profsojuznaya ulitsa, 93, korpus 2, kv. 384, Moscow, U.S.S.R.

Filed Sep. 12, 1979, Ser. No. 75,205

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.51 **3 Claims**



1. A microwave magnetron-type device, comprising:

at least one anode block, each said at least one anode block having cavities formed therein;

said device further comprising vanes for electrically connecting said cavities;

each said at least one anode block further comprising annular metal straps electrically associated with respective said vanes in each said at least one anode block, and having the same polarity at π-mode;

said annular metal straps otherwise having different polarities, and electrically associating those of said vanes having the same polarity and forming pairs of said annular metal straps in each said at least one anode block;

each said at least one anode block having an axis, said pairs of said annular metal straps being arranged with respect to one another along the axis of respective said at least one anode block to form a single multi-stage retardation system;

said device further comprising means for creating a magnetic field having a magnetic field density and directed along the axis of each said at least one anode block, and embracing all of said at least one anode blocks;

each said at least one anode block having end faces, said device further comprising means for increasing the magnetic field density in direct proximity to the end faces of each said at least one anode block, and forming a gap with said end faces of said end faces of respective said at least one anode block;

at least some of said annular metal straps being at least partially made of a magnetic material having a mass, the mass of said magnetic material of said annular metal straps being so distributed along the axis of each said at least one anode block that the magnetic field density varies along the axis of respective said at least one anode block as follows:

$$B_x = B_0 - B_{01}\left(\sin\frac{\pi}{l}X_1\right) + B_{02}\left(1 + \cos\frac{2\pi}{h}X_1\right),$$

where

B_x is a variation in the magnetic field density along the axis of said at least one anode block;

B_0 is a constant component of the homogeneous magnetic field density along the axis of said at least one anode block;

B_{01} is the amplitude of variation in the magnetic field

density along the axis of said at least one anode block, over its length X_1, which does not exceed 50% of B_0;

B_{02} is the amplitude of fluctuation of the magnetic field density from one said pair of said annular metal straps of said single multi-stage retardation system to another along the axis of said at least one anode block, over its length X_1, which does not exceed 20% of B_0;

h is the spacing between said pairs of said annular metal straps;

$n=1,2,3\ldots$ is a coefficient equal to the number of half-cycles of a cosinusoidal distribution of an amplitude of a high-frequency electric field of a respective mode;

said vanes having ends, each said at least one anode block having an anode opening formed therein, and defined by the ends of said vanes;

said device further comprising a cathode arranged in said anode opening of respective said at least one anode block;

each said cathode having a heater of said cathode, each said heater being arranged, together with corresponding said cathode in direct proximity thereto, in corresponding said anode opening;

said device further including means comprising evacuated cermet insulators for holding said cathode and heater in said anode opening;

said device further comprising a filament current source for said heater, and electrically associated therewith;

said device further comprising an anodic voltage source electrically associated with said at least one anode block and said cathode thereof;

said means for creating a magnetic field including a source of voltage;

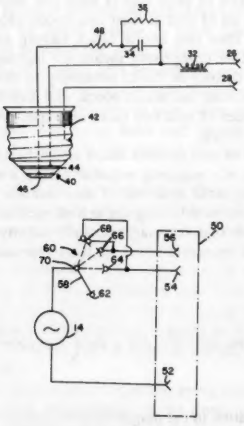
said device further comprising at least one power output section including an output coupler electrically associated with said at least one anode block.

4,284,925

MULTIPLE LEVEL DIMMING CIRCUIT FOR FLUORESCENT LAMP

Carlo S. Bessone, Woburn, and William J. Roche, Merrimac, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 18, 1979, Ser. No. 104,996
Int. Cl.³ H05B *41/40*
U.S. Cl. 315—240 **11 Claims**



1. A multiple level dimming circuit for use with a fluorescent lamp operated from a voltage supply source comprising, in combination:

inductive ballast means having a first terminal adapted to be selectively connected to said supply source and a second terminal adapted to be connected to said fluorescent lamp;

a third terminal adapted to be selectively connected to said supply source;

means including a discharge resistor and a capacitor ballast means series connected in that order between said third terminal and said first terminal;

bleeder resistance means connected across said capacitor ballast means; and

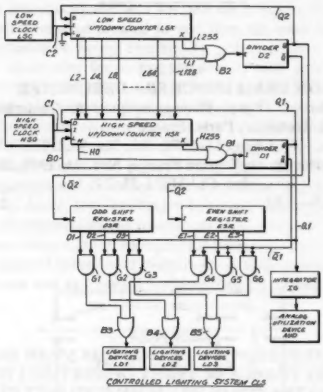
said voltage supply source including a single-pole multiple-throw switch having a common terminal connected to one side of said supply source and at least first and second position contacts and a third position contact means, said first and third terminals being connectable to said first and second position contacts, respectively, and said third position contact means being connected to both said first and second position contacts.

4,284,926

DECORATIVE LIGHTING CONTROL WITH A WAVEFORM GENERATOR

Frank Dinges, 176 W. 87th St., New York, N.Y. 10024

Filed Nov. 24, 1978, Ser. No. 963,349
Int. Cl.³ H05B *37/02*; H03K *7/08*
U.S. Cl. 315—312 **16 Claims**



1. A waveform generator comprising: a multi-stage up-down counter means, said up-down counter means having a plurality of load input terminals connected to the stages for registering a desired initial count in response to a coded combination of signals received in parallel, a count input for unit changing the registered count in response to a received pulse, a direction input for controlling the direction of the counting in response to the level of a received signal, an upper output for emitting a signal whenever the registered count reaches a given upper value, and a lower output for emitting a signal whenever the registered count reaches a given lower value; loading means for controllably feeding a coded parallel combination of signals representing a desired initial count to said load input terminals; a pulse source connected to said count input and operating at a given frequency; and binary means for emitting a signal having a first level when in a first state and emitting a signal having a second level when in a second state, said binary means having an input for changing the state of the binary means upon receipt of a signal from one of said outputs and being connected to said upper output and said lower output, and said binary means having an output for controlling said loading means and for emitting a width modulated waveform signal.

4,284,927

METHOD FOR BREAKING DIRECT CURRENT AND D.C. BREAKER FOR EFFECTING SAME

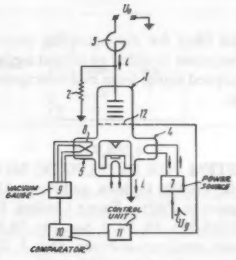
Andronik G. Iosifian, Bolshevistsky pereulok, 9, kv. 14; Vladilen P. Fotin, Gospitalny val, 3, korpus 5, kv. 140, both of Moscow; Vladimir N. Bondaletov, ulitsa Lenina, 9, kv. 45, Istra Moskovskoi oblasti; Evgeny I. Lapshin, ulitsa Bosova, 1, kv. 3, Istra Moskovskoi oblasti; Alexandr S. Ostrovsky, ulitsa Lenina, 9-a, kv. 72, Istra Moskovskoi oblasti, and Alexandr I. Savchenko, ulitsa Pervomaiskaya, 10, kv. 22, Istra Moskovskoi oblasti, all of U.S.S.R.

Filed Jun. 2, 1978, Ser. No. 912,110

Claims priority, application U.S.S.R., Jun. 6, 1977, 2493251

Int. Cl.[3] H01J *17/20*

U.S. Cl. 315—340 **2 Claims**



1. A method for breaking direct current in a gas discharge device comprising:

(a) setting initial gas pressure level so that ratio of maximum current density in a positive gas discharge column to said initial pressure is below a critical value when a current channel moves at a high speed across a cavity of said device;

(b) passing the direct current through said device;

(c) decreasing said gas pressure in said current channel due to absorption of gas by intermediate electrodes in said device;

(d) decreasing subsequently the density of gas in the current channel resulting in uniform distribution of said current in the discharge chamber; and

(e) increasing the current and voltage simultaneously across load to reach a predetermined point where it causes to break said current.

4,284,928

SWITCHABLE VERY-HIGH-VOLTAGE DIRECT-CURRENT POWER SUPPLY FOR CAPACITIVE LOAD

Claude Ragot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 5, 1979, Ser. No. 72,625

Claims priority, application France, Sep. 8, 1978, 78 25851

Int. Cl.[3] H01J *29/80*

U.S. Cl. 315—375 **12 Claims**

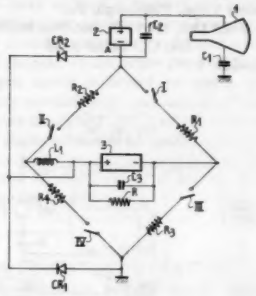
1. A very-high-voltage direct-current power supply for a capacitive load, comprising:

a bridge circuit with four resistance arms;

a main direct-current source of high nominal voltage connected in series with said load across one diagonal of said bridge circuit;

at least one auxiliary direct-current source of lower nominal voltage connected across the other diagonal of said bridge; and

a set of four switches respectively inserted in said arms and operable in pairs for additively combining the voltages of said main and auxiliary sources in a first position, subtractively combining the voltages of said main and auxiliary



sources in a second position, and disconnecting said auxiliary source from said load in a third position.

4,284,929

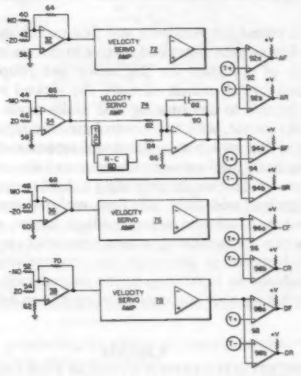
AMBULATOR CONTROL CIRCUITRY

Robert A. Garrett; John Silva, and Craig R. Allen, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1978, Ser. No. 955,427

Int. Cl.[3] H02P *1/54*

U.S. Cl. 318—51 **20 Claims**



1. A joy stick motor control device comprising:

a plurality of electrical motor means for driving a plurality of loads;

a plurality of pulse width modulated signal generators, each having its output connected to one of said plurality of electrical motor means;

a plurality of velocity servo amplifiers, each having its output connected to one of said pulse width modulated signal generators;

a plurality of differential amplifiers each having its output connected to one of said velocity servo amplifiers;

first, second and third joy stick potentiometers operably connected to said plurality of differential amplifiers; and

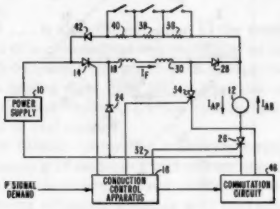
a three axis joy stick operably coupled to said first, second and third joy stick potentiometers;

wherein said plurality of electric motor means comprises first, second, third and fourth DC motors.

4,284,930
MOTOR CONTROL APPARATUS AND METHOD

Thomas C. Matty, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1979, Ser. No. 86,380
Int. Cl.[3] H02P 3/08
U.S. Cl. 318—269 10 Claims



1. In control apparatus operative with a voltage source for determining one of a power mode of operation and a brake mode of operation for a motor coupled to a load and including a field winding and an armature, the combination of:

first switch means connected with said voltage source to provide a first current circuit to establish said power mode by energizing said field winding and energizing said motor armature in a first direction in relation to said voltage source when the first switch means is conducting,

second switch means connected with said voltage source to provide a second current circuit to establish said brake mode by energizing said field winding and energizing said motor armature in a second direction in relation to said voltage source when the second switch means is conducting,

control means coupled with said first switch means to make the first switch means conductive to determine said power mode of operation for the motor and coupled with the second switch means to make the second switch means conductive to determining said brake mode of operation for the motor, with said control means coupled with each of said first switch means and said second switch means to make both the first switch means and the second switch means conductive for providing a third current circuit for energizing said field winding without energizing said armature in relation to said voltage source, and

conduction determining means operative with the first switch means to determine the conductivity of the first switch means in relation to the second switch means for establishing said brake mode of operation for said motor.

4,284,931
OVERSPEED SHUTDOWN SYSTEM FOR CENTRIFUGE APPARATUS

Robert J. Ehret, Los Altos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 14, 1979, Ser. No. 20,390
Int. Cl.[3] H02P 3/08, 3/18
U.S. Cl. 318—318 4 Claims

1. An overspeed protection system for a centrifuge apparatus including a rotor driven by a drive motor comprising:

transducer means for providing a signal whose frequency is a function of the rotational speed of said centrifuge rotor;

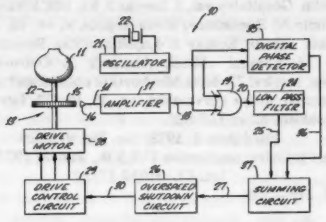
means for generating a reference signal having a predetermined frequency;

means for mixing the rotational speed signal with the reference signal to provide a difference frequency signal;

a filter coupled to the output of said mixing means for passing signals having frequencies below a predetermined frequency;

means responsive to said rotational speed signal and said reference signal for generating an overspeed signal when the frequency of said rotational speed signal exceeds the frequency of said reference signal; and

means coupled to said overspeed signal generating means

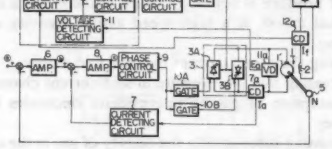


and to said filter for disconnecting power to said drive motor in response to either an output signal from said filter or an overspeed signal from said overspeed signal generating means.

4,284,932
SYSTEM FOR DRIVING DC MOTOR

Shigeki Kawada; Yoshiki Fujioka, and Naoto Ohta, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Sep. 18, 1979, Ser. No. 76,615
Claims priority, application Japan, Oct. 2, 1978, 53/120374
Int. Cl.[3] H02P 5/16
U.S. Cl. 318—338 4 Claims



1. A system for driving a DC motor having an armature and a field winding and driven by using a three-phase anti-parallel thyristor bridge circuit having a three-phase alternating voltage applied thereto, said system comprising:

a first means for controlling an armature current I_a flowing through said armature of said DC motor; and

a second means for controlling a field current I_f flowing through said field winding, said second controlling means including a first detecting circuit for detecting said armature voltage E_a, a second detecting circuit for detecting said field current I_f, a field setting circuit for setting the maximum level of said field current in response to said three-phase alternating voltage, said maximum level being constant when said three-phase alternating voltage is higher than a predetermined value and said field current being proportional to said three-phase alternating voltage when said three-phase alternating voltage is lower than said predetermined value, a field control circuit for integrating the sum of the output signals generated by said first and second detecting circuits and an output signal generated from said field setting circuit and field controller means for controlling said field current in response to the integrated signal such that, when said three-phase alternating voltage decreases to a value lower than said predetermined value, said field current I_f is decreased so that said armature voltage E_a is decreased, and when said three-phase alternating voltage is higher than said prede-

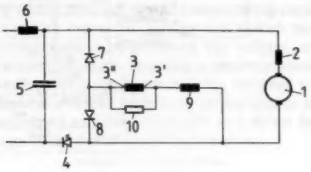
termined value, said field current I_f is held constant wherein said armature voltage E_a is constant.

4,284,933

CONTROL CIRCUIT FOR REDUCING FIELD VOLTAGE IN D.C. MOTORS

Franz Galliker, Winterthur, and Peter Knapp, Oberehrendingen, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jul. 3, 1979, Ser. No. 54,465
Claims priority, application Switzerland, Jul. 5, 1978, 7322/78
Int. Cl.³ H02P 5/16
U.S. Cl. 318—345 C **6 Claims**



1. In a direct current motor circuit provided with automatic field suppression and including an armature winding, a commutating pole winding connected to the armature winding, an exciter winding connected to the armature winding and the commutating pole winding by a pair of diodes, and an electronic direct current regulator, means for decreasing the field voltage peaks in the motor, comprising:

a choke coil connected in series with the exciter winding, and

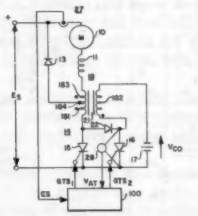
a resistor connected in parallel with the exciter winding and operative to conduct current of either polarity during operation of the direct current regulator.

4,284,934

MOTOR CONTROL APPARATUS WITH AN IMPROVED THYRISTOR CHOPPER CIRCUIT

Hiroshi Narita; Michimasa Horiuchi; Masahiko Ibamoto, and Hideaki Rokutan, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1979, Ser. No. 10,304
Claims priority, application Japan, Feb. 8, 1978, 53/12482; Feb. 20, 1978, 53/17638
Int. Cl.³ H02P 5/16
U.S. Cl. 318—345 C **11 Claims**



1. A motor control apparatus to control the supply of current from a source to an electric motor comprising:

a chopper circuit connected to said source in series with the electric motor and including main and auxiliary thyristors connected in parallel with each other and a capacitor connected to the thyristors in parallel;

a freewheel diode connected in parallel to the electric motor, whereby motor current continues to flow therethrough when said chopper circuit is blocked;

chopper control means for controlling the duty factor of said chopper circuit depending on a current instruction signal; and

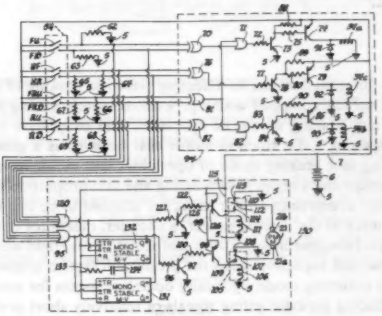
a saturable current transformer having a first winding connected to carry at least a part of the current flowing through said electric motor, a second winding connected within the closed circuit which is formed with the capacitor of said chopper circuit when the auxiliary thyristor of said chopper circuit is turned on, and a third winding magnetically coupled with said second winding and connected within the closed circuit which is formed with said freewheel diode when said chopper circuit is blocked for inducing current through the second winding to charge the capacitor of said chopper circuit in response to the current flowing therethrough.

4,284,935

VEHICLE POWER SEAT ADJUSTER CONTROL SYSTEM

Anthony March, Rochester, and Thomas E. Horton, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 24, 1979, Ser. No. 42,097
Int. Cl.³ H02P 1/22
U.S. Cl. 318—280 **5 Claims**



1. A power seat adjuster control system for use with power seat adjuster mechanisms of the type that are drivable through a plurality of selectable seat adjusting modes by respective operating devices that may be selectively coupled to a bi-directional electric operating motor through respective solenoid operated dog-type clutches that may become locked up should the seat be adjusted in any seat adjusting mode until motor stall thus preventing seat adjustment in another mode that requires motor armature rotation in the same direction as that until stall, comprising:

means for producing an electrical signal indication of each selected seat adjusting mode;

first circuit means responsive to any one of said electrical signal indications for effecting the energization of the said solenoid operated clutch through which the said operating device that drives said seat adjuster mechanism through the selected seat adjusting mode is coupled to said operating motor; and

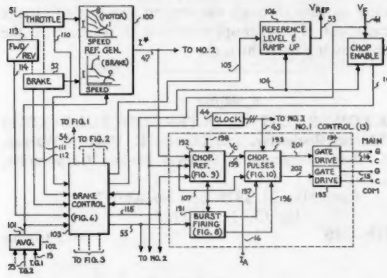
second circuit means responsive to any one of said electrical signal indications for effecting the energization of said operating motor for armature rotation in the direction to effect seat adjustment in the selected mode and responsive to the termination of said electrical signal indication of the selected seat adjusting mode for effecting for a predetermined period of time the energization of said operating motor for armature rotation in the direction opposite to the direction of armature rotation during the period of said electrical signal indication whereby any lock-up of the solenoid operated clutch that may occur should the seat be adjusted in any seat adjusting mode until motor stall is relieved.

4,284,936

CHOPPER TYPE PROPULSION SYSTEM WITH LOW SPEED ELECTRICAL BRAKING CAPABILITY FOR TRACTION VEHICLES

Ronald B. Bailey, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed May 2, 1979, Ser. No. 35,352
Int. Cl.[3] H02P 3/14
U.S. Cl. 318—381 26 Claims



1. Improved means for effecting electrical braking of a traction vehicle equipped with a propulsion system having motoring and braking modes of operation, said propulsion system comprising a d-c traction motor that behaves as a generator during said braking mode of operation, said motor having an armature and a series field winding and said propulsion system further comprising a filter capacitor adapted to be coupled to a siource of d-c electric power, a chopper, means for connecting said chopper in series with said armature and field windings across said capacitor when the propulsion system is operating in its motoring mode, cyclically operative means for normally producing periodic gating signals of relatively short predetermined duration, means responsive to said gating signals for alternatively turning on and turning off said chopper, and free wheeling rectifier means connected in circuit with said armature and series field winding to conduct motor current during intervals when said chopper is turned off, wherein the improvement comprises:

(a) command means having alternative motoring and braking states;

(b) brake set up means operative in response to a motoring-to-braking state change of said command means for reconnecting the propulsion system to establish an armature current path comprising said field winding in series with first and second parallel branches, said first branch including said chopper and said second branch including said capacitor in series with said free wheeling rectifier means, and for reversing the polarity of the connection of said series field winding relative to said armature, said brake set up means being effective whenever said command means is in its braking state to maintain said armature current path and to maintain the reversed polarity connection of said field winding and armature; and

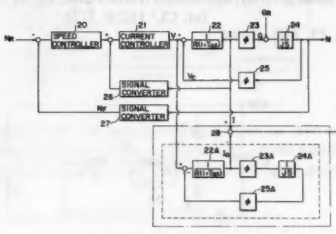
(c) burst firing means effective in response to the reconnecting operation of said brake set up means and the start of a braking state of said command means for supplying to said gating signal responsive means an extended chopper turn-on signal having a duration substantially longer than said predetermined duration of the gating signals normally produced by said cyclically operative means, thereby ensuring that said chopper turns on and conducts armature current to begin the braking mode of operation of the propulsion system.

4,284,937

LOAD CURRENT DETECTING APPARATUS OF DIRECT CURRENT MOTORS

Kunio Sekiguchi, Kawagoe, and Masaharu Noguti, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 17, 1979, Ser. No. 85,672
Claims priority, application Japan, Oct. 25, 1978, 53-130420
Int. Cl.[3] H02P 1/02, 5/16
U.S. Cl. 318—388 4 Claims



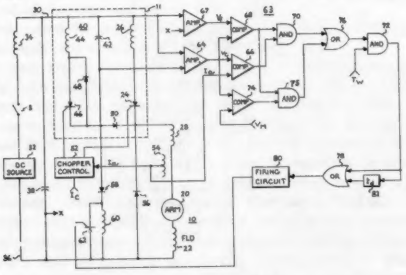
1. Load current detecting apparatus of a direct current motor for driving a load comprising a load current detector including a simulation circuit representing a no load state of said motor, said similation circuit including a first circuit element representing an armature circuit of said motor and a second circuit element connected to said first circuit element and representing a counter electromotive force coefficient of said motor; means for applying to said first circuit element a signal representing terminal voltage of said motor so as to produce an acceleration or deceleration current of said motor; a comparator for comparing actual armature current of said motor with said acceleration or deceleration current to obtain a load current signal; and means responsive to said load current signal for controlling speed of said motor.

4,284,938

CHOPPER WITH ADAPTIVE ENERGY COMMUTATION

Ronald B. Bailey, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 28, 1978, Ser. No. 973,573
Int. Cl.[3] H02P 5/16
U.S. Cl. 318—432 7 Claims



1. In a power control system including a time ratio control electric power circuit connected between an electric load and a pair of d-c power busses of relatively positive and negative potential that are adapted to be connected to a source of d-c electric power, through an electric filter comprising at least a filter capacitor connected between the positive and negative busses, the power circuit including a cyclically turned-on main load current carrying thyristor and a commutation circuit

operative to periodically turn-off the main thyristor, the commutating circuit including a commutation capacitor tht discharges during the turn-off process of the commutating circuit, the commutation capacitor being connected in a path that includes the d-c source and that conducts charging current during intervals when the main thyristor is turned-off, the improvement comprising:

(a) inductive means serially connected in said charging current path;

(b) controllable switch means connected in shunt with said inductive means and having a high resistance blocking state and a relatively low resistance conducting state;

(c) unidirectional conducting means connected in said charging current path and poled to conduct said charging current; and

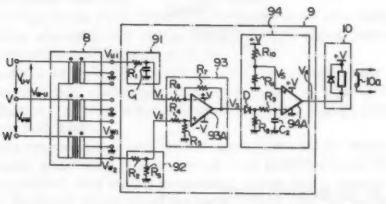
(d) gating means coupled to said commutating capacitor and to said switch means for forcing said switch means to its conducting state in response to the voltage across said commutating capacitor attaining a predetermined variable magnitude, said gating means being coupled to monitor the magnitude of said main load current and to adjust said predetermined variable magnitude as a direct function of the magnitude of said main load current.

4,284,939

DEVICE FOR DETECTING OPPOSITE PHASE AND OPEN PHASE

Shigeki Kawada; Yoshiki Fujioka; Naoto Ohta, all of Hino, and Yutaka Koiwai, Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Sep. 18, 1979, Ser. No. 76,548
Claims priority, application Japan, Sep. 30, 1978, 53-119899
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—453 **4 Claims**



1. A device for detecting opposite phases and an open phase in an input three-phase voltage for driving a DC motor, wherein said input three-phase voltage is rectified by a three-phase bridge circuit having a DC output supplied to the armature of said DC motor, wherein said input three-phase voltage is supplied to a Δ-Y transformer and the outputs of said transformer are connected to a gate circuit for generating firing pulses to said three-phase bridge circuit, said device comprising:

a first phase shifter connected to a first output of said Δ-Y transformer, for producing a first voltage which lags a first phase of said input three-phase voltage by a phase angle of 60°;

a second phase shifter connected to a second output of said Δ-Y transformer, for producing a second voltage which lags a second phase of said input three-phase voltage by a phase angle of 180°, said second phase leading said first phase by a phase angle of 240°;

a differential amplifier connected to outputs of said first phase shifter and said second phase shifter for producing a difference voltage therebetween;

comparator means connected to said differential amplifier for comparing the maximum level of said difference voltage with a reference voltage; and

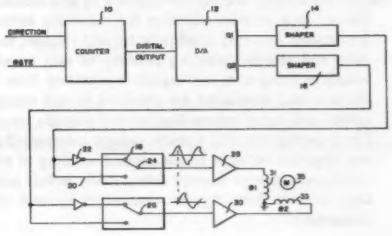
controller means connected between said comparator means and the input side of said three-phase bridge circuit for controlling the application of said input three-phase voltage to said three-phase bridge circuit, such that said input three-phase voltage is applied to said three-phase bridge circuit only when the maximum level of said difference voltage is equal to or smaller than said reference voltage.

4,284,940

ELECTRICAL WAVE SYNTHESIZER FOR CONTROLLING AN ELECTRIC MOTOR

Ross Welburn, Santa Rosa, Calif., assignor to Compumotion Corporation, Santa Rosa, Calif.

Filed Aug. 17, 1979, Ser. No. 67,363
Int. Cl.³ G05B *19/40*; H02P *5/06*
U.S. Cl. 318—696 **8 Claims**



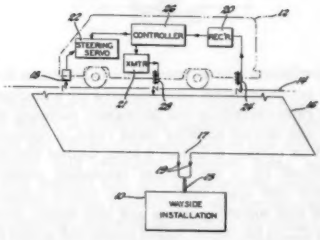
1. An electrical wave synthesizer responsive to direction and speed input signals and providing an analog control signal for controlling an electric motor comprising counter means for receiving and counting electrical pulses indicative of speed, digital to analog conversion means for receiving count from said counter means and generating an analog signal in response thereto, non-linear amplifier means for receiving and distorting said analog signal, and multiplexer means for receiving the distorted analog signal from said nonlinear amplifier means and developing a full wave alternating polarity control signal.

4,284,941

DATA COMMUNICATIONS BETWEEN FIXED AND MOVING TERMINALS

William R. Regueiro, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1979, Ser. No. 82,297
Int. Cl.³ G05D *1/00*; B64C *13/18*
U.S. Cl. 318—587 **3 Claims**



1. A communications system for automated guidance transportation wherein a vehicle communicates status information to a wayside installation and the wayside installation communicates lateral guidance and control information to the vehicle comprising:

a conductor defining a course over which said vehicle is to travel, said conductor having a loop closing portion whereat the ends of said conductor form loop terminals;

first and second wayside transformers, each of said transformers having first, second, and third windings;

a first circuit comprising in series connection, said third windings of said first and second transformers and said loop terminals;

an electrical load having an impedance substantially matched with that of said conductor;

a second circuit comprising in series connection said load and the first windings of said first and second transformers;

means connecting said second winding of said first transformer to a wayside transmitter for applying a lateral guidance signal to said conductor and for modulating said guidance signal in accordance with control information for said vehicle;

means connecting said second winding of said second transformer to a wayside receiver for receiving information transmitted into said conductor by said vehicle, the turns ratio and relative winding polarity of said transformer windings being such that signals transmitted from a vehicle into said conductor are received in said wayside receiver, and signal transmitted by said wayside transmitter for reception by said vehicle induce substantially equal and opposite voltages in said second winding of said second transformer to thereby substantially isolate said wayside receiver from signals transmitted by said wayside transmitter.

4,284,942

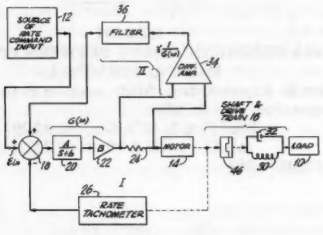
LOAD DRIVING APPARATUS

William J. Bigley, Scotch Plains, and Vincent J. Rizzo, Basking Ridge, both of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Continuation-in-part of Ser. No. 866,394, Jan. 6, 1978. This application Jun. 16, 1978, Ser. No. 916,138

Int. Cl.³ G05B *5/01*

U.S. Cl. 318—618 **7 Claims**



1. In combination in servomechanism apparatus for driving a load via coupling means characterized by a mechanical resonance at rates exceeding said resonance, summing means having first and second additive input ports, a subtractive input port and an output, a motor, a load, output coupling means characterized by a mechanical resonance connecting said motor and said load, first network means connecting said output of said summing means and said motor, first negative feedback means having an output connected to said subtractive input port of said summing means and an input responsive to said motor, drive monitoring means for monitoring the drive consumed by said motor, second network positive feedback means having an input connected to said drive monitoring means and an output connected to said first additive input port of said summing means for increasing the energization applied to said motor when said monitoring means senses an increasing drive consumed by said motor to thereby overcome said mechanical resonance of said coupling means, and slip clutch means serially connected with said output coupling means for obviating excessive loading of said motor.

4,284,943

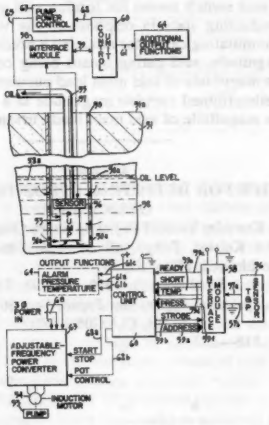
APPARATUS AND METHOD FOR CONTROLLING THE SPEED OF AN INDUCTION MOTOR IN A CLOSED-LOOP SYSTEM

Denton C. Rowe, Coon Rapids, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed Feb. 13, 1979, Ser. No. 11,855

Int. Cl.³ H02P *5/28;* **G06F** *7/28;* **E21B** *33/03;* **F16K** *31/12*

U.S. Cl. 318—806 **11 Claims**



1. In combination with:

(a) an A.C. induction motor;

(b) adjustable-frequency power converter means operatively connected with said induction motor for providing a variable frequency power signal to energize said induction motor, said frequency-converter being operable to provide an A.C. output signal having frequency determined by a received control signal;

(c) means operated by said induction motor for performing a function which has an effect upon at least one external measurable parameter; and

(d) sensor means disposed to sense said one measurable parameter for periodically providing a measurement signal responsive thereto, said measurement signal being accurate within a measurement error band based on the measurement accuracy of said sensor means;

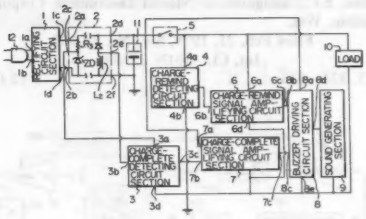
wherein the invention comprises:

control means suitable for operative connection to receive said periodic measurement signals from said sensor means and to provide a control signal to said adjustable-frequency power converter means, for generating said control signal responsive to cummulative changes in said measurement signals received over a predetermined period of time, said control signal being of a nature whereby when applied to said power convertor, said power convertor energizes said motor so as to regulate said measurable parameter to an accuracy greater than the measurement accuracy of said sensor means.

4,284,944
BATTERY CHARGING DEVICE HAVING BATTERY STATE INDICATING FUNCTION

Kouichi Iwanaga, and Hiromi Kakumoto, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 12, 1979, Ser. No. 84,058
Claims priority, application Japan, Oct. 12, 1978, 53/125491
Int. Cl.³ H02J 7/04; G08B 21/00
U.S. Cl. 320—48 **7 Claims**


LOAD
CHARGE REMIND DETECTING CIRCUIT SECTION
CHARGE-REMIND SIGNAL AMP. LIGHTING CIRCUIT SECTION
CHARGE-COMPLETE DETECTING CIRCUIT SECTION
CHARGE-COMPLETE SIGNAL AMP. LIGHTING CIRCUIT SECTION
BUZZER DRIVING CIRCUIT SECTION
SOUND GENERATING SECTION

1. A battery charging device having a battery state indicating function comprising:

a rectifier for converting an AC source current into a direct current;

a high frequency charging circuit including a transistor, a transformer having windings respectively disposed in the collector, base and emitter circuits of said transistor, and a rectifying diode connected in series between said emitter circuit transformer winding and the emitter of said transistor, wherein a battery to be charged is connected in parallel with said series connected of said diode and said emitter circuit winding;

detecting means responsive to the charge level of a battery being charged, for producing an output signal when a predetermined level is reached;

a control circuit responsive to said detecting means for causing said charging circuit to produce an intermittent charging voltage when said predetermined charge level is reached; and

means responsive to said level detecting means for intermittently generating a sound when said predetermined level is reached, said sound generating means being responsive to the level of charge of the battery such that the length of the period between each generated sound, relative to the length of each generated sound, is varied in dependence upon the charge level.

4,284,945
CURRENT DIVIDERS USING EMITTER-COUPLED TRANSISTOR PAIRS

Adel A. A. Ahmed, Clinton Township, Hunderdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 973,457, Dec. 26, 1978. This application Mar. 10, 1980, Ser. No. 128,872
Int. Cl.³ G05F 3/20
U.S. Cl. 323—315 **9 Claims**

1. A current divider comprising:

a first terminal for conducting the current to be divided;

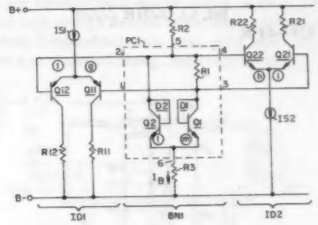
second and third terminals for conducting respective portions of the divided current;

first and second transistors of a first conductivity type having respective emitter electrodes connected to said first terminal, having respective collector electrodes connected to said second terminal and to said third terminal, and having respective base electrodes;

a first resistance;

first and second semiconductor diode means, said first diode means exhibiting a smaller offset voltage thereacross for given flow of current therethrough than said second diode means, said first diode means and said first resistance being in a first series connection, said second diode means in parallel connection with said first series connection;

means for applying a bias current to said parallel connection for forward biasing said first and second diode means; and

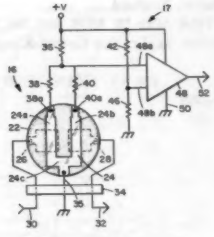


means for applying voltage between the base electrodes of said first and second transistors that is directly related to the resulting voltage appearing across said first resistance.

4,284,946
FAILURE MONITOR FOR CRYSTAL FILTERS

John A. Sharrow, Ft. Lauderdale, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 18, 1979, Ser. No. 50,009
Int. Cl.³ G01R 29/22
U.S. Cl. 324—56 **3 Claims**



1. In a crystal filter comprising a piezoelectric means having a surface on which an electrically conductive resonator structure is plated and electrically connected to one terminal of a voltage source, said resonator structure being horseshoe shaped having parallel legs and a connecting segment, said resonator structure being connected to said one terminal at said connecting segment, means for monitoring the integrity of the resonator structure and of the electrical connection between said resonator structure and said one terminal comprising:

a comparator having first and second input terminals;

means for impressing a reference voltage on said first input terminal;

a resistive voltage divider network connected between the other terminal of said voltage source and said resonator structure and having an intermediate tap connected to said second input terminal, said resistive voltage divider network having parallel arms respectively connected to the parallel legs of said resonator structure.

4,284,947

DETECTING THE SIZE AND SHAPE OF BODIES

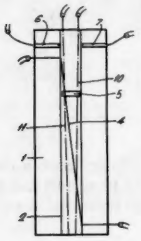
Hyman Walton, Beckermet, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 10, 1979, Ser. No. 56,324

Claims priority, application United Kingdom, Aug. 8, 1978, 32600/78

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **14 Claims**



1. A method of detecting information as to the shape and size of a body comprising moving the body along a fixed path, arranging the plates of a capacitor so that the electric field of the capacitor cuts the path at different points across the breadth of the path along the length of said path, detecting changes in dielectric constant of the capacitor caused by movement of said body along said fixed path, comparing the changes so detected with changes caused by a reference body of known size and shape and deducing from the comparison information as to the size and shape of the body.

4,284,948

IMAGING SYSTEMS

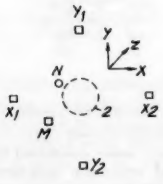
Ian R. Young, Sunbury on Thames, England, assignor to EMI Limited, Hayes, England

Filed May 18, 1979, Ser. No. 40,289

Claims priority, application United Kingdom, May 25, 1978, 22293/78

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—309 **19 Claims**



1. A nuclear magnetic resonance apparatus, for examining at least one slice of a body, the apparatus including means for applying to the body a steady magnetic field along an axis therein, means for applying a gradient field which, in conjunction with said steady field gives a predetermined field in said slice, means for applying a pulsed periodic magnetic field at the Larmor frequency for said slice to cause resonance therein, means for applying a further pulsed magnetic field having a gradient across the slice in one direction and a second further pulsed magnetic field having a gradient in the same direction but of opposite sense to the first further field and means for sensing the resonance signal resulting from the slice during the said further pulsed fields, the apparatus further including means for applying a pulsed correction magnetic field also having a gradient in said direction and chosen so that the total algebraic integral with respect to time over the two further fields and the corrections field is less than the total field integral for the two further fields.

4,284,949

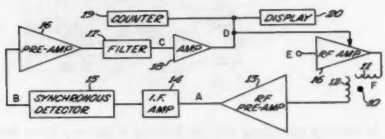
NUCLEAR MAGNETIC RESONANCE SPECTROMETER AND METHOD

Drouet W. Vidrine, Madison, Wis., and Paul E. Peterson, Columbia, S.C., assignors to Nicolet Instrument Corporation, Madison, Wis.

Filed Feb. 21, 1979, Ser. No. 13,627

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—315 **12 Claims**



1. In a nuclear magnetic resonance spectrometer of the type having transmitting means for exciting a first nucleus in a sample in a polarizing magnetic field at a frequency corresponding to its resonant peak, the improvement which comprises feedback means including means for detecting the frequency difference between the resonant peak of said first nucleus and the resonant peak of a second nucleus in said sample and means for modulating said transmitting means with a signal representative of said frequency difference.

4,284,950

IMAGING SYSTEMS

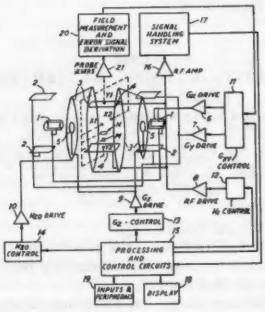
Michael Burl, Iver; Hugh Clow, Reading; Colin G. Harrison, High Wycombe, and Ian R. Young, Sunbury-on-Thames, all of England, assignors to E M I Limited, Hayes, England

Filed Jun. 15, 1979, Ser. No. 48,777

Claims priority, application United Kingdom, Aug. 5, 1978, 32386/78

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—320 **10 Claims**



1. A medical nuclear magnetic resonance imaging apparatus for providing a nuclear magnetic resonance image of a cross-sectional part of the body of a patient, the apparatus including a coil system arranged to provide a substantially uniform magnetic field in a direction parallel to a chosen axis in the patient's body, probe means for providing signals indicative of values of the magnetic field at a plurality of positions in a region including the part to be imaged, means for determining, from said

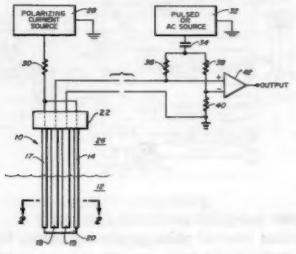
signals, deviations from uniformity of said magnetic field in the region and correction means responsive to said determinations for reducing said deviations from uniformity.

4,284,951

BATTERY ELECTROLYTE LEVEL SENSOR

Ernest A. Dahl, 3247 Breaker Dr., Ventura, Calif. 93003, and George H. Barry, 21225 Saratoga Hills Rd., Saratoga, Calif. 95070

Filed Aug. 15, 1979, Ser. No. 66,755
Int. Cl.³ G01F *23/10*; G01N *27/06*
U.S. Cl. 324—430 **10 Claims**



1. Apparatus for indicating the level of electrolyte in a battery cell comprising:

a. a probe including: an elongated housing of an electrically insulating material which is chemically nonreactive with battery electrolyte; six elongated metal bars embedded longitudinally in said housing in a substantially parallel arrangement around the perimeter of said housing, the outer surface of each said bar protruding from said housing to expose each said protruding surface to the ambient environment, said bars being electrically coupled in pairs to form first, second and third electrodes; said first, second and third electrodes being spaced apart from each other and disposed vertically in a battery cell so that only a portion of the surface area of each electrode is in contact with battery electrolyte, the amount of the surface area of said second and third electrodes in contact with battery electrolyte varying as the level of electrolyte in the battery cell varies;

b. a source of electric potential coupled between said second and third electrodes;

c. a polarizing current source coupled to the first electrode; said polarizing current source providing a current which operates to prevent the buildup of a contaminating layer on the surface of the second and third electrodes due to said second and third electrodes functioning as a battery whenever said source of electric potential has a direct current component that produces a net charge on said second and third electrodes; and

d. means for providing a signal proportional to the resistance between said second electrode and said third electrode through the electrolyte, said resistance varying inversely with the amount of surface area of said second and third electrodes which is in contact with the electrolyte.

4,284,952

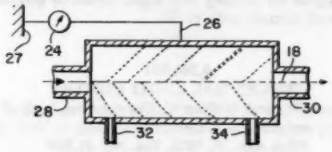
NEUTRAL BEAM MONITORING

Joel H. Fink, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 21, 1977, Ser. No. 853,371
Int. Cl.³ G01R *27/00*; G01N *27/78*
U.S. Cl. 324—464 **4 Claims**

1. Apparatus for monitoring selected characteristics of a high energy neutral beam generated from an accelerated, focused, high energy ion beam, comprising:

an elongated cell having a longitudinal wall bounded by two lateral ends, the length dimension of said wall being several times greater than the dimension of said ends, one of said ends having an inlet for inletting said high energy ion beam, the other of said ends having an outlet for discharging said high energy neutral beam, said cell further having a central longitudinal axis, said inlet and outlet being aligned and disposed along said longitudinal axis;



means for inletting a neutralizing gas into said cell;

means for maintaining a preselected pressure within said cell;

means for detecting the current flowing through said wall of said cell produced by low energy ions which drift to said cell wall; and

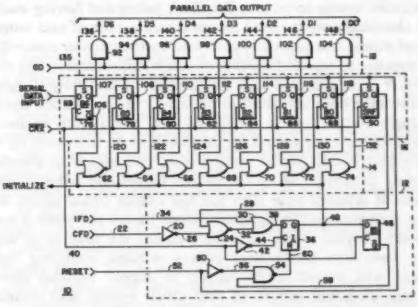
means for directing said current flowing through said wall of said cell from said wall to said current detecting means.

4,284,953

CHARACTER FRAMING CIRCUIT

Edward C. Hepworth, Austin, Tex., and Rodney J. Means, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 863,643, Dec. 23, 1977, abandoned, which is a continuation of Ser. No. 640,981, Dec. 15, 1975, abandoned. This application Jun. 13, 1979, Ser. No. 48,193
Int. Cl.³ H03K *19/28, 15/00*
U.S. Cl. 328—37 **5 Claims**



1. A digital system for receiving successive data characters transmitted as contiguous characters forming synchronous serial data which is a continuous sequence of digital data bits, said system comprising:

(a) shift register means comprising a plurality of serially coupled shift register stages each, except for the last stage thereof, having an output connected to the input of the succeeding stage, and the first stage thereof being coupled to a source of said serial data, and each stage being coupled to a source of clock pulses, said clock pulses being synchronized with said digital data bits;

(b) logic means for generating a control code prefix and for loading said control code prefix into one of said shift register stages;

(c) means for shifting said control code prefix to a second

one of said shift register stages and for coincidentially shifting serial data into said shift register means in synchronism with said source of clock pulses;

(d) means for detecting said control code prefix in said second shift register stage and for generating a signal;

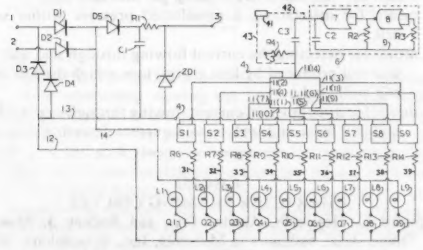
(e) means responsive only to said signal for indicating that said serial data is occupying said shift register means as a received serial data character; and

(f) control means coupled to said logic means and to said source of clock pulses and responsive to the occurrence of said signal for causing said logic means to generate and load said control code prefix.

4,284,954
SEQUENTIAL LIGHT CIRCUIT

Earl L. Beyl, Jr., and William C. Cunningham, both of Louisville, Ky., assignors to Traintronics Inc.

Filed Apr. 20, 1979, Ser. No. 31,859
Int. Cl.³ H03K *21/32, 3/42*
U.S. Cl. 328—75 **1 Claim**



1. A sequential activation control for sequential activation and uniform deactivation of at least two power circuits including: clock means to provide regularly occurring uniform length timing pulses at selected intervals, counter means, with counter controller means to receive the clock pulses and having multiple electrical output signal means wherein each of said output signal means is sequentially activated by the counter controller in response to selected number of clock pulses received by said counter means until a selected number of said output signal means have been activated to provide a first activation cycle, multiple switch means, where at least one switch means is provided for each output signal means to be activated by its associated output signal means; reset end means to simultaneously deactivate all of the switch means and output signal means at selected time after the last output signal means has been activated and to cause said clock means to initiate a new activation cycle where the switch means are adapted to activate associated cooperative power circuits, including light means; and power supply means to supply uniform direct current electrical power to said clock means, said counter means and said switch means.

4,284,955
PULSE REPETITION INTERVAL GENERATOR WITH STAGGER COMPENSATION

Lawrence A. Beno, Camarillo; Harrell, John T., Newbury Park; Albert B. Evans, Jr., Ventura, and Jay R. Gaudig, Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 875,831, Feb. 7, 1978, Pat. No. 4,163,234. This application May 17, 1979, Ser. No. 39,917
Int. Cl.³ H03K *5/22*
U.S. Cl. 328—111 **8 Claims**

1. A pulse repetition interval generator with stagger comprising:

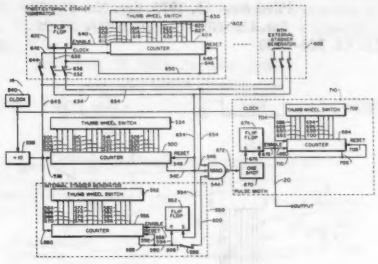
a. means for generating a series of pulses having a constant preset repetition interval;

b. said constant repetition interval pulse generating means includes:

a source of clock pulses;

a counter circuit responsive to said clock pulses, said counter circuit generating a first output pulse when filled; said first output pulse resetting said counter; and

means coupled to said counter for presetting said counter thereby setting the repetition interval between said output pulses;



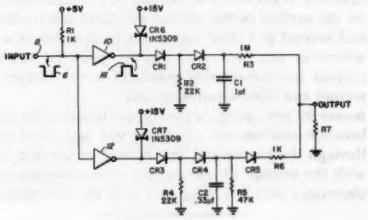
c. at least one pulse generator responsive to said constant repetition interval pulse generating means for generating at least one pulse between pulses generated by said constant repetition interval pulse generating means; and

d. means responsive to said constant repetition interval pulse generating means and said at least one pulse generator for determining the width of the pulses generated therefrom.

4,284,956
WIDE DYNAMIC RANGE PULSE TO PULSE RATE CONVERTER

(Paul) Harry Leffmann, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 7, 1979, Ser. No. 36,897
Int. Cl.³ H03K *13/02, 9/06*
U.S. Cl. 328—140 **2 Claims**



1. A wide dynamic range pulse to pulse rate converter comprising in combination:

first means for linearly converting an input pulse rate to a first linear analog output;

second means for linearly converting said input pulse rate to a second linear analog output; and

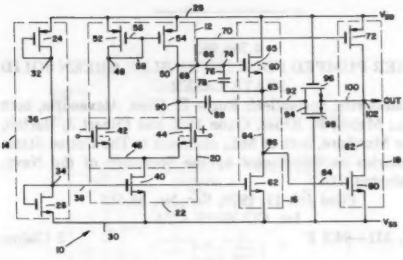
means for superpositioning said first and second analog outputs.

4,284,957

CMOS OPERATIONAL AMPLIFIER WITH REDUCED POWER DISSIPATION

Yusuf A. Haque, Santa Clara, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Sep. 28, 1979, Ser. No. 80,153
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 **6 Claims**



1. An operational amplifier comprising:
a pair of conductors adapted for connection to potential sources at different voltage levels;
a bias section connected between said pair of conductors, said bias section having an output terminal;
a differential amplifier section, connected between said conductors including a constant current element connected to said output terminal of said bias section, said differential amplifier including an input section for receiving positive and negative signal inputs to said amplifier and having an output terminal;
an output section connected between said conductors and comprised of a pair of complementary MOS transistors;
first means for connecting said output terminal of said differential amplifier directly to one of said transistors of said output section;
a level shift section connected between said conductors, said level shift section having an output terminal, where said level shift section comprises a pair of MOS transistors, one of which has its gate connected to said output terminal of said differential amplifier by a second means for connecting, and the second of which has its gate connected to said bias section; and
third means for connecting said output terminal of said level shift section to the other transistor of said output section.

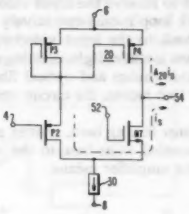
4,284,958

FOLDED-CASCODE AMPLIFIER ARRANGEMENT WITH CURRENT MIRROR AMPLIFIER

Richard L. Pryor, Voorhees, N.J., and William F. Heagerty, Norristown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,233
Int. Cl.³ H03F *3/45, 3/16*
U.S. Cl. 330—253 **17 Claims**

1. An amplifier arrangement comprising:
a folded-cascode configuration including first and second transistors of complementary conductivity type each having a main conduction path;
constant current generating means coupled for supplying quiescent current to said folded-cascode configuration;
means for applying an input signal to said first transistor for causing signal current flows in the main conduction paths of said first and second transistors; and
current mirror amplifying means having input circuit means to which at least the signal current flow in the main conduction path of said first transistor is coupled and having output circuit means coupled to the main conduction path of said second transistor for supplying an output current flow responsive to the signal current flow in said input circuit means, said output current flow of said output



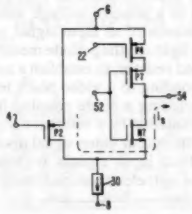
circuit means being poled for reinforcing the signal current flow of said second transistor.

4,284,959

FOLDED-CASCODE AMPLIFIER ARRANGEMENT WITH CASCODE LOAD MEANS

William F. Heagerty, Norristown, Pa., and Richard L. Pryor, Voorhees, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,234
Int. Cl.³ H03F *3/45, 3/16*
U.S. Cl. 330—253 **21 Claims**



1. An amplifier arrangement comprising:
a folded-cascode configuration including first and second transistors of complementary conductivity type, each having a main conduction path;
constant current generating means coupled for supplying quiescent current to said folded-cascode configuration;
means for applying an input signal to said first transistor for causing signal current flows in the main conduction paths of said first and second transistors; and
load means to which said folded-cascode configuration is coupled including
circuit means for supplying load current,
a third transistor of like conductivity type to that of said first transistor, having its input electrode coupled for receiving a control signal, and having its main-conduction path coupled in series with said circuit means; and
means for applying said control signal to condition said third transistor for conducting said load current to the output electrode of said folded-cascode configuration substantially unaffected by said input signal.

4,284,960

PHOTO-FEEDBACK PREAMPLIFIER CIRCUIT

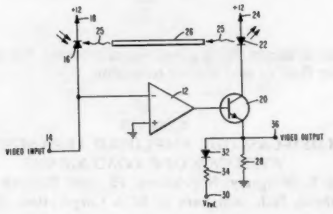
John O. Ryan, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 23, 1979, Ser. No. 96,727
Int. Cl.³ H03F *1/34, 3/16*
U.S. Cl. 330—300 **1 Claim**

1. A video camera preamplifier circuit employing a low voltage supply, for generating an output video signal in re-

sponse to an input video signal, wherein the input video signal may experience large overload input signals due to excessive highlights, the circuit including a field effect transistor amplifier means coupled to receive the input video signal and optoelectronic feedback loop means operatively coupling the output video signal back to the input video signal, wherein the feedback loop means includes light emitting diode means, light detecting photodiode means and optical fiber means coupled between the latter two means, the circuit comprising the combination of;

an output transistor having base, emitter and collector electrodes, and coupled at its base to the output of the field effect transistor amplifier means;



a load resistor coupled from the emitter of the output transistor to ground;

wherein the light emitting diode means of the loop means is coupled directly to the collector of the output transistor at its cathode and to a positive voltage source at its anode such that the absence of an input signal provides no current flow in the light emitting diode means and no current flow thru the load resistor, to establish a zero output video voltage corresponding to a video black level; and

clipping means including a diode coupled from the emitter of the output transistor to a reference voltage for selectively clipping the output video signal upon occurrence of the large overload input signals without breaking the continuity of the optoelectronic feedback loop.

4,284,961

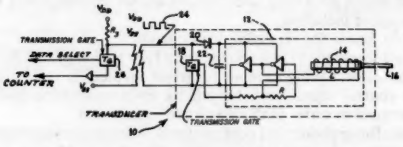
DIGITAL POSITION TRANSDUCER INCLUDING VARIABLE TUNING ELEMENT OSCILLATOR

Darrell W. Landau, Garden Grove, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 19, 1979, Ser. No. 76,893

Int. Cl.³ G01R *27/26;* G03K *3/03;* H03K *3/354*

U.S. Cl. 331—65 **8 Claims**



1. A digital position transducer apparatus comprising in combination:

an oscillator means with a variable tuning element to control the output frequency of said oscillator means, said tuning element being connected to and varied by a position element which responds to the displacement of a control element, said output frequency varying as a function of said position element's displacement,

a transmission gate connected between a signal ground and a source voltage, said transmission gate receiving said output frequency from said oscillator means, said transmission gate being turned on and off respectively to provide a high logic level and a low logic level in response to said output frequency, said transmission gate providing an output signal which is substantially a square wave comprising high and low logic levels, said output signal having a frequency corresponding to said output frequency, and,

a low logic level sustaining means connected between said source voltage and said oscillator means, said low logic level sustaining means maintaining a predetermined voltage level across said oscillator means during the time said transmission gate is turned on.

4,284,962

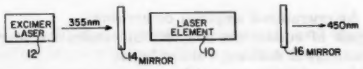
EXCIMER-PUMPED FOUR LEVEL BLUE-GREEN SOLID STATE LASER

Leon Esterowitz, Springfield; Roger E. Allen, Alexandria, both of Va.; Melvin R. Kruer, Oxon Hill, and Filbert J. Bartoli, Upper Marlboro, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1979, Ser. No. 56,655

Int. Cl.³ H01S *3/14*

U.S. Cl. 331—94.5 F **5 Claims**



1. A solid state laser element for four-level blue-green operation in a laser system and comprising:

a host crystal of calcium tungstate;

divalent sensitizer ions uniformly dispersed within said host crystal, wherein said divalent sensitizer ions are ytterbium and said divalent sensitizer ions of ytterbium have a concentration of from about 0.005% to about 0.20% by weight; and

trivalent rare-earth activator ions uniformly dispersed within said host crystal.

4,284,963

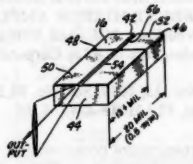
ETALON LASER DIODE

Louis B. Allen, Jr., Florissant; Herbert G. Koenig, Jr., St. Charles, and Robert R. Rice, Florissant, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 24, 1979, Ser. No. 69,388

Int. Cl.³ H01S *3/19*

U.S. Cl. 331—94.5 H **19 Claims**



1. A stripe geometry semiconductor laser diode for producing a light output, said diode being comprised of a body of semiconductor material having:

first and second electrodes connected thereto;

front and rear surfaces;

optical cavity means in the form of a stripe, extending between said front and rear surfaces, said output of said diode emitting from said front surface thereof; and

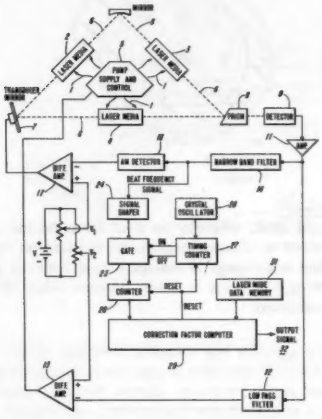
a first crack through said body generally parallel to said front and rear surfaces to form an etalon therein.

4,284,964

SELF-DETERMINATION OF LASER FREQUENCY

Roe J. Maier, Jr., Bosque Farms, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 4, 1979, Ser. No. 36,252
Int. Cl.[3] H01S 3/10
U.S. Cl. 331—94.5 S 2 Claims



1. An apparatus for determining the frequency of a ring laser when potential modes and the beat frequency of mode pairs is accurately known a priori, comprising:

a. a laser resonant cavity including an active media;

b. a means for introducing energy into said cavity in a sufficient quantity to pump said active media so as to sustain a pair of resonant modes distinguished by frequency, each having beams traveling in opposite directions;

c. a means for detecting the beat frequency of said modes and generating a signal whose amplitude is proportional to a multiple of the mode intensities;

d. a means for adjusting the pathlength of said laser cavity which is responsive to said signal;

e. a means for counting beat frequency signals;

f. a means for timing the count of said beat frequency signals, where the accuracy of said timing means is sufficiently precise to define the pair of modes on the basis of difference frequencies known a priori; and

g. a means for comparing the count with the beat frequencies of known pairs of modes to select the most likely pair of modes actually present in the cavity.

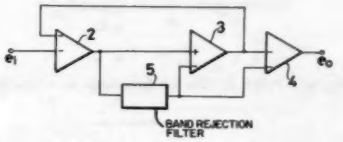
4,284,965

TONE CONTROL DEVICE

Ryozi Higashi, and Hiroyuki Hirano, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,026
Claims priority, application Japan, Sep. 11, 1978, 53/110614; Sep. 19, 1978, 53/114031; Sep. 22, 1978, 53/115987
Int. Cl.[3] H03H 7/01
U.S. Cl. 333—28 T 7 Claims

1. A tone control device for audio equipment, comprising: a first mixer amplifier having a plurality of input terminals and an output terminal, one of said input terminals being fed with an input signal, a first band rejection filter having an output terminal and an input terminal connected to said output terminal of said first mixer amplifier for providing variable frequency characteristic of a signal channel assigned thereto, a second mixer amplifier having one input terminal connected to said output terminal of said first mixer amplifier, another input terminal connected to said output terminal of said first band rejection filter, and an output terminal, a third mixer amplifier having a plurality of input terminals and an output terminal, one of said input terminals of said third mixer amplifier being connected to said output terminal of said first band rejection filter and another of said input terminals of said third mixer amplifier being connected to said output terminal of said second mixer amplifier and to another input terminal of said first mixer, the ratio of said output of said second mixer amplifier to said input signal, and the ratio of the output of said second mixer to the output of said band rejection filter being variable at said first and third mixers, respectively, to control a gain of said tone control device at a desired frequency.

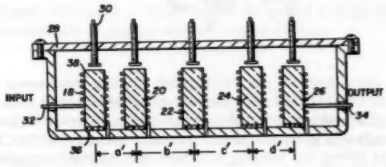


4,284,966

WIDE BANDWIDTH HELICAL RESONATOR FILTER

Ronald J. Wanat, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1979, Ser. No. 106,413
Int. Cl.[3] H01P 1/201, 7/00
U.S. Cl. 333—202 4 Claims



1. A wideband helical resonator device for use in a circuit responsive to applied high frequency signals comprising:

an elongated enclosure of conductive material;

at least three helical coils each connected at one end to the inner surface of said enclosure, and arranged so as to have predetermined, and fixed, non-uniform spacing, and with the second end of each coil maintained in a fixed spatial relationship to said enclosure, whereby a pre-selected resonant frequency and a pre-selected bandwidth is obtained;

means for input of high frequency signals; and

means for output of high frequency signals.

4,284,967

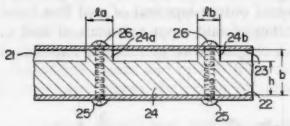
WAVEGUIDE DEVICE

Yoshikazu Yoshimura, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1979, Ser. No. 76,578
Claims priority, application Japan, Sep. 22, 1978, 53-117292
Int. Cl.[3] H01P 3/123, 1/00, 11/00
U.S. Cl. 333—248 8 Claims

1. A waveguide device comprising a rectangular waveguide including a pair of opposed H-plane inner walls and a pair of opposed E-plane inner walls, and a ridge conductor mounted on one of said H-plane inner walls, said ridge conductor being parallel to the electric field of the fundamental mode of said

waveguide and having at least one integral portion extending therefrom in contact with the other H-plane inner wall,



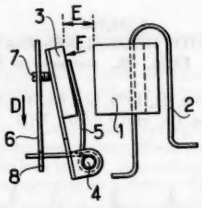
whereby said ridge conductor functions as a reactance element.

4,284,968

ADJUSTABLE ELECTROMAGNETIC TRIPPING MECHANISM FOR A CIRCUIT-BREAKER

Serge Denoyelle, and Pierre Noisette, both of Saint-Quentin, France, assignors to Alsthom-Unelec, Paris, France

Filed Dec. 19, 1979, Ser. No. 105,170
Claims priority, application France, Jan. 4, 1979, 79 00150
Int. Cl.[3] H01H *71/74*
U.S. Cl. 335—176 **2 Claims**



1. An adjustable electromagnetic tripping mechanism for a circuit-breaker having at least one pole, including in each pole: a fixed magnetic circuit element excited by the current passing through said pole; a movable magnetic member, a stop, and a return spring for holding said movable magnetic member by the force of said return spring, against said stop at a predetermined distance from the fixed magnetic circuit element; a movable adjusting element bearing said stop and including a point of attachment of said return spring, which enables the limiting operation current of the circuit-breaker to be varied, such that movement of said movable adjusting element modifies at the same time and in the same sense of variation, firstly the distance predetermined by said stop between the movable magnetic member and the fixed magnetic circuit element, and secondly the force exerted by said return spring upon the movable magnetic member, the improvement wherein said movable adjusting element consists of a small plate of generally plane form guided in translation in slides for movement in a direction parallel to the face of said plate.

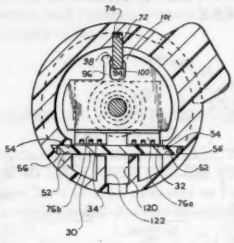
4,284,969

POTENTIOMETER

Victor Carbonneau, Exeter, N.H., assignor to Clarostat Mfg. Co., Inc., Dover, N.H.

Filed Nov. 9, 1979, Ser. No. 92,664
Int. Cl.[3] H01C *10/44*
U.S. Cl. 338—183 **6 Claims**

1. A potentiometer having a plurality of voltage inputs comprising in combination a housing, a non-electric conducting substrate in said housing, layers of resistance and collector material disposed on the substrate and adapted to communicate electric current, a carrier supported by a shaft, a wiper fixedly mounted on said carrier providing a circuit between the resistance material and the collector material with said wiper being responsive to an axial force placed on said carrier, a spring-means capable of exerting a force on said carrier opposite to said axial force, a guide-means which includes a rail fixedly positioned in said housing, said carrier includes a portion straddling said rail and slidably spring loaded thereagainst so that axial movement of the carrier is relatively uninhibited by the guide means while preventing the rotation of said carrier with



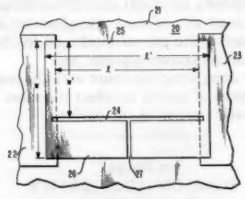
respect to said shaft, whereby an axial force on the carrier causes the wiper to change longitudinal position on the substrate resulting in a change in voltage output with the spring-means returning the wiper to a rest position when the axial force is discontinued.

4,284,970

FABRICATION OF FILM RESISTOR CIRCUITS

Lloyd Berrin; Howard M. Cohen, both of Allentown; William B. Grupen, Emmaus, and James D. McElroy, Allentown, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1979, Ser. No. 65,179
Int. Cl.[3] H01C *10/00*
U.S. Cl. 338—195 **21 Claims**

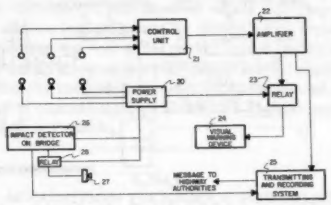


1. A method for fabricating a resistor circuit comprising the steps of forming on an insulating substrate (**21**) a rectangular resistor film (**20**) and a conductive layer including electrodes (**22** and **23**) which provide electrical contact to said film so as to define a direction for current conduction through said film when a bias is supplied, characterized in that a first cut (**24**) is made in said film in a direction essentially parallel to the direction of current conduction and extending across the entire distance of the film between electrodes to define a rectangular current-carrying portion (**25**) with an essentially uniform width having a resistance near a predetermined desired resistance and to define a rectangular waste portion (**26**), and a second cut (**27**) is made in said waste portion in a direction essentially perpendicular to said first cut in order to prevent current flow therethrough between the electrodes.

4,284,971
OVERHEIGHT VEHICLE DETECTION AND WARNING SYSTEM

Elliot G. Lowry, 3141 S. 3075 East, Salt Lake City, Utah 84109, and Lloyd N. Forster, 443 Garfield, Salt Lake City, Utah 84115

Filed Apr. 2, 1979, Ser. No. 25,939
Int. Cl.³ G08B 25/00; G08G 1/04
U.S. Cl. 340—52 R 9 Claims



1. A height clearance indicator and warning system for use on a thoroughfare in advance of overhead obstructions, such as overpasses, railroad tressels, overhead signs, and the like, which traverse the roadway and which become low clearance hazards for vehicles having a height greater than the clearance afforded by the obstruction, said indicator and warning system comprising:

at least two light sources located on either side of the thoroughfare in advance of the overhead obstruction, said light sources being spaced from each other along the thoroughfare so that a vehicle approaching said obstruction will pass the light sources one at a time in sequential order, each of said light sources also being mounted at a height above the thoroughfare no greater than the clearance of the impending overhead obstruction;

a number of light sensors equal to the number of light sources, each light sensor being paired with a respective light source and located across the thoroughfare in the vicinity of its respective light source, said light sensors being mounted at a height above the thoroughfare substantially equal to the height above the thoroughfare of said light sources;

detector means for detecting when the light beams from respective light sources to corresponding sensors paired therewith have been momentarily broken;

means for producing a signal when the detector means detects that the light beams from the respective light sources are, within a given, preset time period, broken in sequence starting from the light beam associated with the pair of light sources and sensors most remote from the overhead obstruction and ending with the light beam associated with the pair of light sources and sensors nearest said overhead obstruction;

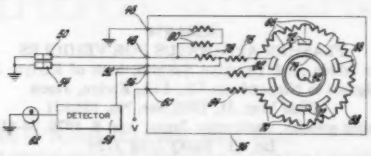
control means adapted to receive said signal and activate a visible electric sign indicating that the vehicle approaching said overhead obstruction is too high to clear the obstruction and warning the driver of the approaching vehicle to stop; and

said means for producing a signal further operating to clear the detector means and thus reset the system to ready status when only a portion of and not all the light beams from the respective light sources are broken within the preset time period, and when the light beams are broken but not in proper sequence.

4,284,972
VEHICLE MILEAGE INTERVAL DETECTOR

Randolph K. Chiu, Davison; Douglas A. Stiff, Burton, and Francis G. Cox, Grand Blanc, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1979, Ser. No. 92,745
Int. Cl.³ B60Q 1/00; G01D 13/00; G08B 5/00
U.S. Cl. 340—52 D 3 Claims



1. In a vehicle having a mechanical odometer comprising a series of number wheels for indicating elapsed distance, a service reminder circuit for actuating a signal device when a preset distance has elapsed, comprising

a voltage source, a potentiometer connected to the voltage source including a resistor circuit, and a movable contact element in wiping engagement with the resistor circuit and carried by one of the odometer number wheels whereby an output voltage is produced which varies with movement of the one odometer wheel,

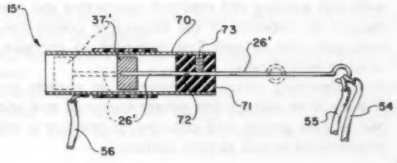
a voltage sensitive detector means responsive to the said output voltage for actuating the said signal device when the output voltage has a value within a preset voltage range representative of the said preset distance, and

manually adjustable circuit means electrically connected with the resistor circuit for changing the potentiometer output voltage to a value outside the preset voltage range to manually deactuate the said signal device.

4,284,973
VEHICLE ALARM SYSTEM

Steven G. Howell, Dogwood La., Oakwood Estate, Wake Forest, N.C. 27587, and Orville F. Harless, 2506 Briarwood Dr., Burlington, N.C. 27215

Continuation-in-part of Ser. No. 888,844, Mar. 22, 1978, Pat. No. 4,187,497. This application Sep. 20, 1979, Ser. No. 77,398
Int. Cl.³ B60R 25/10
U.S. Cl. 340—65 10 Claims



1. An alarm system comprising: a remote receiver component, alarm means operatively connected to said receiver component; a portable transmitter component; trip means operatively connected to said transmitter component whereby when said trip means is closed an alarm signal will be sent from said transmitter component to said receiver component; and an adjustable motion sensitive closure means in the form of a generally horizontally disposed, cylindrical shaped shroud means, at least a part of which is electrically conductive, with a weight means horizontally disposed interiorly thereof supported by a spring arm means operatively connected to said trip means, the length of said spring arm being longitudinally adjustable to adjust the sensitivity of said weight means relative to said cylindrical shroud whereby when said transmitter

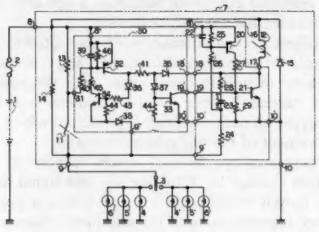
component is disturbed, the system of the present invention will emit an alarm.

4,284,974

FLASHER APPARATUS FOR VEHICLES

Hideo Ishida, and Yasuhiko Sukurai, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 31, 1980, Ser. No. 135,931
Claims priority, application Japan, Apr. 5, 1979, 54-41361
Int. Cl.³ B60Q *1/38, 1/26*
U.S. Cl. 340—81 R **1 Claim**



1. A flasher apparatus for vehicles having an electric power source, two groups of direction indicating lamps and a direction indicating switch manually closed to select one of said two lamp groups, said flasher apparatus comprising:

relay means having a winding connected in series with said electric power source and a normally-open switch connected in series with said electric power source and said direction indicating switch, said normally-open switch being closed to energize said selected one of two lamp groups by said electric power source when said winding is energized;

oscillator means kept operative by the closure of said direction indicating switch and including a first and second transistors, said second transistor being connected in series with said winding and rendered conductive and nonconductive in response to the respective conduction and nonconduction of said first transistor to energize said winding periodically;

current detecting means reponsive to an electric current flowing from said electric power source to said selected one of two groups and effective to produce a voltage proportional to said electric current;

and

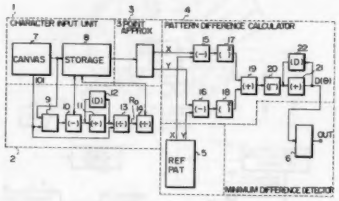
short-circuit detector means including third, fourth and fifth transistors, said third transistor being connected in series with said second transistor and effective to be rendered conductive when said voltage exceeds a predetermined value, said fourth transistor being connected in series with said first transistor and rendered conductive when said first transistor is rendered conductive from the nonconduction under the conduction of said third transistor to thereby prevent said second transistor from being rendered conductive thereafter, and said fifth transistor being connected in parallel with said normally-open switch and rendered conductive by the conduction of said third transistor under the nonconduction of said second transistor to thereby keep the conduction of said third transistor under the nonconduction of said second transistor.

4,284,975

ON-LINE PATTERN RECOGNITION SYSTEM FOR HAND-WRITTEN CHARACTERS

Kazumi Odaka, Tokorozawa, Japan, assignor to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Nov. 30, 1979, Ser. No. 98,813
Claims priority, application Japan, Dec. 12, 1978, 53/153999
Int. Cl.³ G06K *9/62*
U.S. Cl. 340—146.3 J **4 Claims**



1. A pattern recognition system for hand-written characters operating on an on-line real-time basis comprising;

(a) a character input unit for providing the coordinates of a plurality of points of a written character, and the number of said points,

(b) pre-process unit for normalizing the size and the position of the written character,

(c) a three points approximate unit for providing three feature points for each stroke of the character, said three feature points being the initial point, the center point and the end point of each stroke,

(d) a pattern difference calculator for providing the sum of the length between the feature points of the input characte and those of the reference characters,

(e) a reference pattern storage for providing the coordinates of three feature points for each stroke of the reference characters, for the calculation of said pattern difference, and

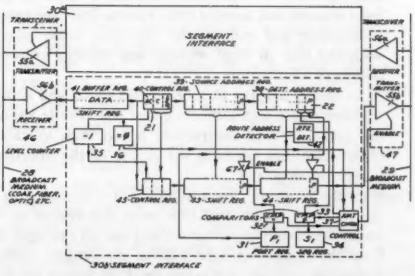
(f) a minimum difference detector for determining the minimum value among the pattern differences thus calculated and determining the input character as the reference character which has the minimum difference.

4,284,976

INTERFACE BETWEEN COMMUNICATION CHANNEL SEGMENTS

Melvin G. Gable, Ypsilanti, and Richard H. Sherman, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1979, Ser. No. 46,576
Int. Cl.³ H04L *11/20;* H04N *1/32;* H04J *3/14;* H04Q *9/00*
U.S. Cl. 340—147 R **15 Claims**



1. A communication system having a broadcast medium

shared by a plurality of transceivers which are transmitting and receiving communication packets, said broadcast medium including a first communication channel segment and a second communication channel segment, the communication system having an interface means for passing communication packets having a hierarchical address in a packet header, which hierarchical address has at least two levels and includes identification of the final destination of the communication packet, from said first communication channel segment to said second communication channel segment of said broadcast medium, each of the first and second communication channel segments having at least two transceivers, said interface means including:

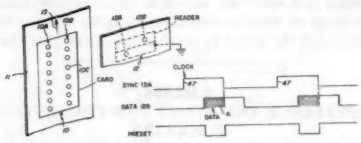
a first address register means for storing a first register field for comparison with a first packet field in the hierarchical address of the communication packet header and for transmitting the communication packet to the second communication channel segment if said first register and packet field do not match.

4,284,977

DATA ACQUISITION TECHNIQUE FOR HOIST AND CONVEYING SYSTEMS

Albert C. Yucius, Brockton, and Michael D. Brother, Abington, both of Mass., assignors to Systems Engineering & Mfg. Corp., Stoughton, Mass.

Filed Aug. 2, 1979, Ser. No. 63,069
Int. Cl.[3] H04Q *3/00*
U.S. Cl. 340—147 P **16 Claims**



1. In a conveying system having a hoist moveable between a plurality of stations, a data acquisition system associated with the conveying system comprising;

coded indicia means with the code representing a control parameter,

means associated with a moveable part of the hoist for receiving the coded indicia means,

reading means for reading the coded indicia,

means associated with another part of the hoist for receiving the reading means permitting relative movement at a station between the coded indicia means and reading means,

and means responsive to the coded reading for interpreting the control parameter,

said coded indicia means including a sync channel and a data channel,

said reading means including a sync channel reader and a data channel reader and means combining the sync and data channel bits to determine code content.

4,284,978

CONVEYING SYSTEM CONTROL

Albert C. Yucius, Brockton, Mass., assignor to Systems Engineering & Manufacturing Corp., Stoughton, Mass.

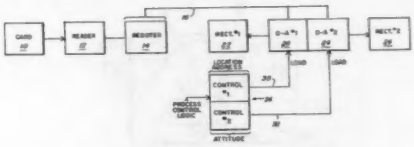
Filed Aug. 2, 1979, Ser. No. 63,070
Int. Cl.[3] H04Q *9/00*; B66C *19/00*
U.S. Cl. 340—147 P **20 Claims**

1. An automatic conveying system for work pieces and having a hoist moveable between a plurality of stations said hoist having relative fixed and moveable members with the moveable member for moving the work piece into and out of a treatment vessel at a station, said system comprising;

a load disposed at a target station and adapted to be controlled to in turn control a process operation on said work piece at said target station,

coded indicia means with the code representing a non-travel with control parameter,

means associated with the hoist for receiving the coded indicia means,



means for reading said coded indicia means,

load control means for controlling the load as a function of said sensed coded indicia means,

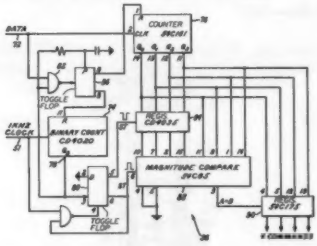
and means for sensing arrival of the hoist at the target station to enable said load control means.

4,284,979

CODING SYSTEM FOR SIMULTANEOUSLY SIGNALING SELECTED ONES OF A PLURALITY OF DEVICES

Thomas E. Flanders, Houston, and Herbert E. Moore, Harris County, both of Tex., assignors to General Electric Company, Philadelphia, Pa.

Division of Ser. No. 817,909, Jul. 22, 1977, Pat. No. 4,136,327.
This application Sep. 25, 1978, Ser. No. 945,658
Int. Cl.[3] G08C *9/00*; H04Q *5/16*
U.S. Cl. 340—359 **2 Claims**



1. A method of providing a signal to one or more of a plurality of devices comprising:

assigning to each device a particular power of an integer; and

transmitting to said devices a series of pulses having a total equal to the sum of the integer raised to each of the powers of those devices to which a signal is to be sent.

4,284,980

DOOR BURGLAR ALARM SYSTEM

Walter W. Hoinski, Norristown, Pa., assignor to Power Systems Development Corporation, Wilmington, Del.

Filed Apr. 20, 1978, Ser. No. 898,421
Int. Cl.[3] G08B *13/08*
U.S. Cl. 340—545 **10 Claims**

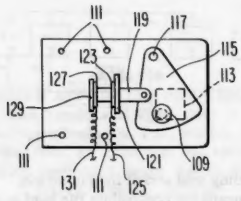
1. A door burglar alarm for mounting to a door jamb comprising:

a bolt slidable into a position for intercepting the travel of said door;

means for supporting said bolt in proximity to said door jamb, said supporting means permitting movement of said bolt by said travel of said door, whereof said supporting means is mounted to said door jamb and wherein said supporting means includes a base support bracket capable

of mounting to said door jamb and a swivel plate pivotally mounted to said base support bracket, said swivel plate being associated with said bolt;

means, associated with said supporting means and said bolt for initiating an alarm signal as a function of the relative



position of said bolt with respect to said supporting means wherein said alarm signal initiating means, said supporting means and said bolt coacting with minimal friction; and

means associated with said supporting means, for positively limiting the distance of travel of said bolt and therefore the travel of said door.

4,284,981

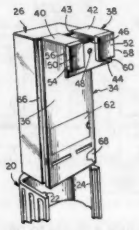
SENSOR ALARM AND SUPPORT

Robert B. Black, 5110 Berkley Ct., Fort Wayne, Ind. 46815

Filed May 19, 1980, Ser. No. 151,303

Int. Cl.³ G08B *21/00*; A47F *5/00*

U.S. Cl. 340—545 **8 Claims**



1. A sensor alarm support for use with a door mounted in a door frame having a door head and two door jambs and hinged on one door jamb to swing closed and latched against the other door jamb comprising:

a mounting plate;

one side of said plate adapted to have mounted thereon a sensor and an alarm coupled to said sensor;

an angle arm being affixed to the top edge of said plate and having a transverse portion extending transversely from the other side of said plate;

a flange depending from said transverse portion and being transversely spaced from and substantially parallel to said plate whereby said plate and arm form an inverted channel snugly fittable over the top door edge;

a stiffly resilient bumper pad being affixed to the outer side of said flange and being positioned on said flange so that the edges of said pad and an edge of said flange are substantially flush, whereby, when said door is in its latched position, a pad portion will be between a corresponding door edge and at least one of said door head and said other door jamb to forcibly cock said door open to provide a clearance for a gaseous path.

4,284,982

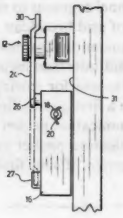
BATTERY OPERATED PERSONAL ALARM

John Downey, Attache Court North, Apt. 912, Shaughnessy Blvd., Don Mills, Ontario, Canada (M2J 1K2)

Filed Apr. 12, 1979, Ser. No. 29,208

Int. Cl.³ G08B *13/08, 15/00*

U.S. Cl. 340—546 **3 Claims**



1. A battery operated personal alarm having a readily portable casing, hook shaped handle means secured to the casing, having a first extended position for engagement in use with a desired object such as a door handle, and a second retracted position relative to said casing to provide in cooperation therewith a passage to receive a strap in inserted relation therein, a withdrawable alarm actuating pin entered in said casing and withdrawable therefrom in order to activate horn means within the casing, and lanyard means secured to the pin for attachment to a relatively moveable object to effect actuation of said alarm on relative displacement being effected between the object and the alarm to produce withdrawal of the pin.

4,284,983

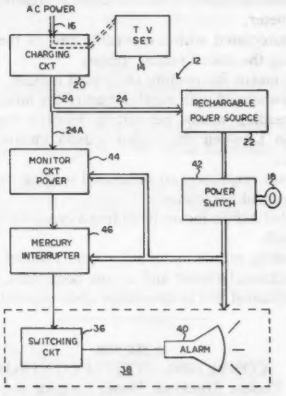
APPLIANCE ANTI-THEFT AND PROTECTION CIRCUITRY

Roger S. Lent, Rte. 2, Box 438, Candler, N.C. 28715

Filed Feb. 19, 1980, Ser. No. 122,571

Int. Cl.³ G08B *13/14*

U.S. Cl. 340—568 **11 Claims**



1. Theft detection and prevention circuitry for use with an electrical appliance having means for connecting to a primary electrical power source, which primary electrical power source provides electrical power for operation of said electrical appliance, said anti-theft and protection circuitry comprising:

a rechargeable electrical power source;

charging circuitry connected between said means for connecting of said electrical appliance and said rechargeable electrical power source for receiving power from said

primary electrical power source and for providing suitable power for recharging said rechargeable electrical power source;

self-latching oscillation means connected to said rechargeable power source for providing a pulsating signal when activated;

alarm means responsive to said pulsating signal;

switching means responsive to a trigger signal for connecting said pulsating signal to said alarm means;

a motion sensor for determining when said electrical appliance is moved and for providing a motion signal;

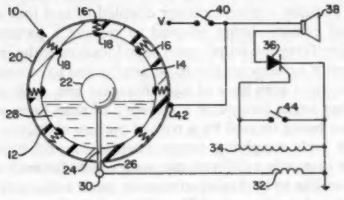
monitoring means for determining when said charging circuit is providing suitable power for recharging said rechargeable power source, for determining when said motion signal is present, and for activating said oscillation means and initiating said trigger signal when said motion signal is present at the same time said charging circuitry is not providing suitable power such that said latching means connects said alarm means to said activated oscillation means when said appliance is disconnected from said primary electrical power source and moved.

4,284,984

ATTITUDE CHANGE ALARM

Joseph J. Scarpino, III, 748 Lakewood Blvd., Akron, Ohio 44314, and David A. Scarpino, 682 W. Paige Ave., Barberton, Ohio 44213

Filed Apr. 3, 1979, Ser. No. 26,531
Int. Cl.³ B60R *25/10*; G08B *13/00*
U.S. Cl. 340—571 **16 Claims**



1. An attitude change alarm, comprising:

a casing having a wall defining a hollow interior;

a plurality of resistive elements received by said wall and in spaced relationship with each other and in common communication with said interior;

a conductive fluid maintained within said hollow interior and in selective contacting engagement with certain of said resistive elements;

circuit means interconnected between said fluid and said resistive elements for producing an output signal upon a change in said contacting engagement of said fluid with said resistive elements; and

alarm means connected to said circuit means for actuation by said output signal.

4,284,985

STOLEN EQUIPMENT RECOVERY DEVICE

Vernon G. Heger, 3517 Albatross, San Diego, Calif. 92103, and Henri J. A. Charmasson, San Diego, Calif., assignors to Vernon G. Heger, San Diego, Calif.

Filed Mar. 3, 1980, Ser. No. 126,307
Int. Cl.³ G08B *13/22*
U.S. Cl. 340—572 **11 Claims**

1. A device for detecting the unauthorized movement or asportation of a body which comprises:

a check station having:

means for transmitting a first pulse-coded signal;

means for receiving a second pulse-coded signal;

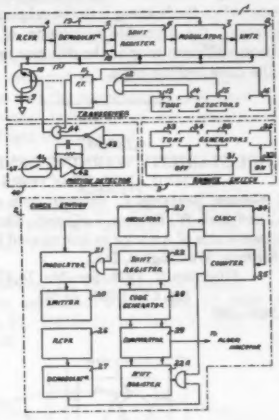
means for comparing the first signal to the second signal;

means, responsive to said means for comparing, for signaling the reception of the second signal;

on the body, a code-repeating transceiver having:

means for receiving said first signal;

means, responsive to said first signal, for transmitting said second signal, said means for receiving comprising:



a shift register receiving said first signal on its serial input and delivering said second signal on its serial output;

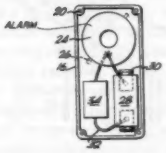
switchable means for selectively enabling the operation of the code-repeating transceiver.

4,284,986

SHIRT-POCKET MEDICAL ALERT DEVICE

Carlos Amortegui, 1116 Wilmington St., Opa Locka, Fla. 33054

Filed Jun. 23, 1980, Ser. No. 162,009
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—573 **10 Claims**



1. A shirt-pocket sized medical alert device comprising:

a separable housing sized and shaped to be carried unobtrusively by a user in a shirt pocket, for example, and to have an original, predetermined orientation on the user, the housing including a cover and a receptacle,

a tilt activated alarm within the receptacle comprising:

alarm means,

power source means,

tilt actuated circuit means, and

electrically conductive conduit means connecting the alarm, power and tilt activated switch means, defining a tilt actuated circuit,

whereby the alarm means is activated when the circuit is tilted and moved sufficiently from its original, predetermined position, for example when the user falls upon suffering a heart attack;

said tilt activated switch means comprising:

a cylindrical carrier spanned by an electrically conductive plate defining a first conductor and including a cone-shaped second conductor having a leading edge contact-

ing the carrier and spaced a predetermined distance from the plate, a bottom end defining a tip and diverging electrically conductive side walls between the tip and leading edge,

an insulator of predetermined thickness between the plate and the cone, and

an electrically conductive flowable substance held in the cone tip when the housing is in the original predetermined orientation, the flowable substance of predetermined thickness sufficient to span the distance between the plate and the cone leading edge.

4,284,987

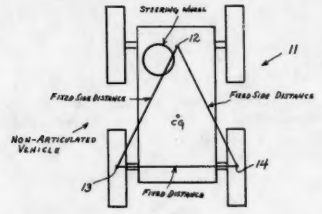
SLOPE STABILITY WARNING DEVICE FOR ARTICULATED TRACTORS

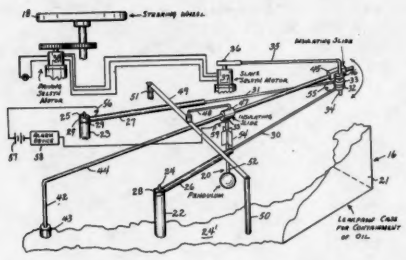
Harry G. Gibson; Benjamin C. Thorner, both of Morgantown, W. Va., and Jack W. Thomas, LaGrande, Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 7, 1979, Ser. No. 73,474

Int. Cl.[3] G08B *21/00*

U.S. Cl. 340—689 **20 Claims**





1. A vehicle of the pinned front axle type having pivotally-connected front and rear frame sections and having a stability triangle with forwardly convergent lateral sides and a fixed transverse rear leg, and including a tip-over warning means mounted on said vehicle and having simulated stability triangle means with rotatable convergent pivotally connected lateral sides of changeable length and means defining a fixed transverse rear side extending substantially parallel to the fixed transverse rear leg of the vehicle stability triangle, pendulum means swingably mounted on said tip-over warning means at a suspension location relative to the simulated stability triangle means substantially corresponding to the location of the vehicle center of gravity with respect to its stability triangle, said pendulum means depending through said simulated triangle means, means to change the lengths of said convergent pivotally connected sides responsive to relative pivoting of said vehicle frame sections, an alarm device, and means to energize said alarm device responsive to contact of said pendulum means with one of said changeable-length sides.

4,284,988

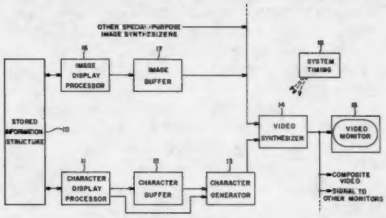
CONTROL MEANS TO PROVIDE SLOW SCROLLING POSITIONING AND SPACING IN A DIGITAL VIDEO DISPLAY SYSTEM

Charles L. Seitz, San Luis Rey; Paul Grunewald, Leucadia; Marshall M. Parker, San Diego, and Irvin G. Stafford, Carlsbad, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 836,747, Sep. 26, 1977. This application Sep. 28, 1979, Ser. No. 79,831

Int. Cl.[3] G06F *3/14*

U.S. Cl. 340—726 **10 Claims**



1. In a digital video display system having a video monitor and a character generator, said video monitor being operated in a raster scan mode whereby a plurality of lines of characters are sequentially displayed during a complete scan period of said video monitor, said character generator including a font storage and control element, said control element comprising:

an initial position register counter coupled to said font storage, said counter being adapted to receive a parameter code specifying the initial raster scan location of the initial scan line of a character line to be display and to increment to subsequent scan lines of said character line, each character line being formed of a plurality of scan lines, each scan line being formed by a row of picture elements;

parameter code supplying means coupled to said register counter to supply a different parameter code for each new character line to be displayed so as to cause a character to be displayed starting at a different scan line of a particular character line during the next display of that character line: and

timing means coupled to said counter and to said parameter code supplying means to generate timing signals representing picture elements to be displayed by said video monitor, said picture elements forming the respective scan lines that display various characters and other symbols.

4,284,989

CHARACTER DISPLAY APPARATUS WITH FACILITY FOR SELECTIVELY EXPANDING THE HEIGHT OF DISPLAYED CHARACTERS

Robert Parsons, Cambridge, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 806,411, Jun. 14, 1977. This application Jan. 22, 1979, Ser. No. 5,416

Claims priority, application United Kingdom, Jun. 21, 1976, 25660/76

Int. Cl.[3] G06F *3/14*

U.S. Cl. 340—731 **16 Claims**

1. Data display apparatus having a display means, a clock signal generator, means for generating a raster scan on said display means synchronized with a clock signal generated by said clock signal generator, data storage means for storing a common set of character data for use in generating character displays in each of a plurality of modes, and means operable in conjunction with said data storage means for activating said display means comprising:

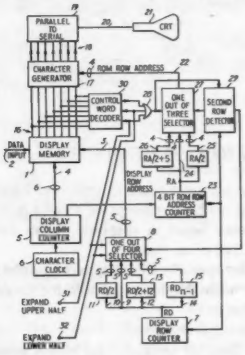
first counter means, connected to the clock signal generator, for interrogating the data storage means in synchronism

with the raster scan to produce coded signals representing data symbols to be displayed by the display means;

second counter means, connected to the clock signal generator, for providing an output indicative of the scan currently being described on the display means;

logic means, connected to the first and second counter means, for modifying, and synchronizing with the raster scan, the outputs of the first and second counter means; and

signal generating means, connected to the logic means, operable to activate the display means to display elements of data symbols in lines of the raster scan which together



form a visible display of the data symbols, each data symbol being defined by activated elemental areas in a plurality of succeeding lines of the scan over a predetermined length in each of the plurality of lines, said signal generating means further operable to activate the display means in different modes to produce a display character of one height in one mode and a display character of a different height in another mode; and

said logic means providing for synchronization, selectively, at two different rates, of the signal generating means with the raster scan, so as to selectively produce displays of data symbols of different heights.

4,284,990

POSITION SENSING TRANSDUCER

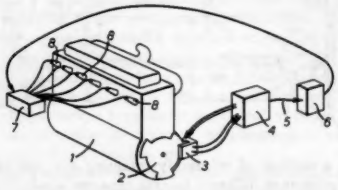
Albert L. Fowler; Alan G. Henderson; Alastair K. Stevenson, and David M. Walker, all of Fife, Scotland, assignors to Hughes Microelectronics Ltd., Glenrothes, Scotland

Continuation-in-part of Ser. No. 21,876, Mar. 19, 1979, abandoned. This application Mar. 3, 1980, Ser. No. 126,583

Claims priority, application United Kingdom, Mar. 29, 1978, 12300/78

Int. Cl.³ G08C *9/04*

U.S. Cl. 340—870.32 **21 Claims**



1. An electrical displacement transducer comprising:

spaced apart transmitting and receiving means for respectively transmitting energy and receiving said energy;

a member for being moved between said transmitting and receiving means, said member interrupting repetitively the passage of said energy from the transmitting means to the receiving means as a function of the movement of the member between said means;

said receiving means producing an electrical output signal which assumes a first magnitude during said repetitive interruptions and a second different magnitude for periods between said interruptions;

means responsive to said output signal for producing a control signal of a magnitude which is representative of an average of said first and second magnitudes; and

a comparator arranged to compare the magnitude of said output signal with the magnitude of said control signal and provide a signal indicative of the commencement and cessation of said interruptions.

4,284,991

COMMON ANTENNA FOR PRIMARY AND SECONDARY RADAR SYSTEM

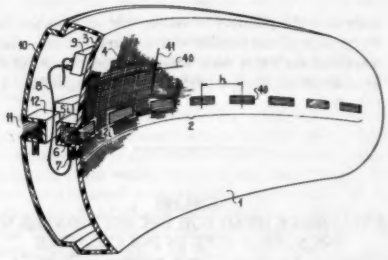
Albert Dupressoir, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 20, 1979, Ser. No. 105,733

Claims priority, application France, Dec. 27, 1978, 78 36484

Int. Cl.³ H01Q *13/18, 19/195, 21/28*

U.S. Cl. 343—725 **16 Claims**



1. A bifunctional antenna for a primary/secondary radar system, comprising:

a reflector with a body of dielectric material having a concave front surface adapted to be illuminated by a primary source of outgoing radiation for detecting a remote target;

a row of secondary radiation transceivers disposed along a generatrix of said front surface intersecting a boresight axis, said transceivers being formed by slots in said front surface backed by cavities having walls integral with said body, said cavities being provided with excitation means; and

feed means connected to said excitation means for energizing said transceivers from a secondary source in a directive sum pattern to emit interrogation signals and superimposing upon said sum pattern a differential control pattern blanking minor lobes of said sum pattern.

4,284,992

WIDE SCAN QUASI-OPTICAL FREQUENCY DIPLEXER

Michael J. Gans, Monmouth Beach, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 106,492

Int. Cl.³ H01Q *15/04, 15/06*

U.S. Cl. 343—909 **6 Claims**

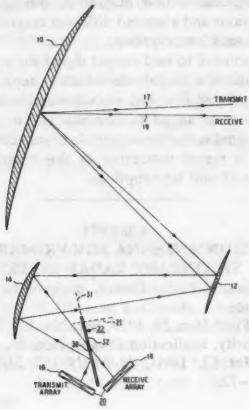
1. A quasi-optical frequency diplexer comprising:

an array of a plurality of stacked waveguide sections (**22**) including a longitudinal axis (**21**) and a diplexer-free space interface (**31**) associated in a mutually perpendicular relationship, each waveguide section comprising a first and a second entrance port at each end thereof, and comprising

dimensions which permit the passage of predetermined frequency bands

characterized in that

the first and the second entrance ports of each waveguide



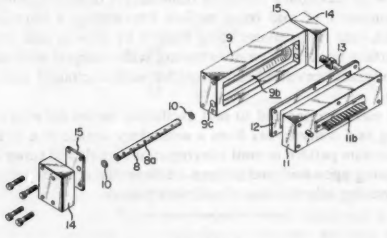
section of the plurality of waveguide sections are respectively aligned and parallel with one another and relatively displaced such that each waveguide section is tilted at a predetermined oblique angle (τ) to the longitudinal axis of the array.

4,284,993

MULTI-NOZZLE HEAD FOR INK JET PRINTER WITH INK SUPPLY PIPE IN INK CHAMBER

Sadao Kakeno, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 120,991
Claims priority, application Japan, Feb. 23, 1979, 54-20473
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **8 Claims**



1. A multi-nozzle head for an ink jet printer comprising

(a) a nozzle unit provided with nozzles spaced in a line from each of which the ink is jetted,

(b) a vibration unit having a vibrating plate on which vibration elements are mounted opposite to said nozzles,

(c) a chamber forming between a front wall provided with said nozzles of the nozzle unit and said vibrating plate,

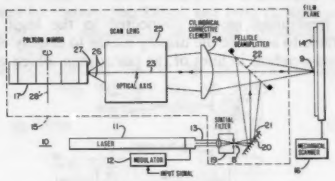
(d) at least one distributing pipe having a plurality of ink outlet ports arranged in parallel with the line of said nozzle in said chamber, said distributing pipe being connected to a supply pipe.

4,284,994

LASER BEAM RECORDER

Bruce M. Radl, Billerica, Mass., assignor to Eikonix Corporation, Bedford, Mass.

Filed Jul. 30, 1979, Ser. No. 61,808
Int. Cl.³ G01D *15/14*; G02B *27/17*
U.S. Cl. 346—108 **10 Claims**



1. Recording apparatus comprising:

photosensitive material;

a laser for providing a beam of coherent light;

modulator means being connected to said laser for modulating said laser beam in response to an electrical signal representative of an image;

filter means for spatially filtering said modulated laser beam, said filter means having a pinhole for providing an axial object point;

a rotatable polygonal mirror;

a cylindrical lens for imaging said object point as a line on said polygonal mirror;

a scan lens; and

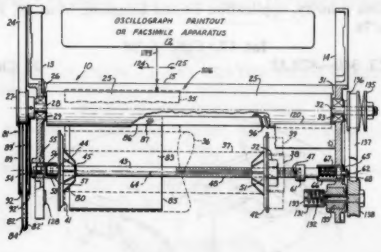
beam splitting means for directing said filtered and modulated laser beam along an optical path through said cylindrical lens and scan lens for reflection by said mirror, said reflected beam being redirected in reverse along said optical path through said scan lens, cylindrical lens and beam splitting means to the photosensitive material for recording as an image point.

4,284,995

METHODS AND APPARATUS FOR RECORDING INFORMATION, SUPPLYING WOUND MATERIALS AND RETAINING TUBULAR OBJECTS

Gary G. Gordon, Newhall, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jun. 18, 1979, Ser. No. 49,537
Int. Cl.³ G01D *15/24, 15/26, 15/34*; B65H *17/02*
U.S. Cl. 346—136 **61 Claims**



1. In a method of releasably retaining any one of several tubular objects of different lengths between a pair of mutually adjustable retention members, the improvement comprising in combination the steps of:

providing a supporting rod;

mounting one of said retention members on said supporting rod;

inserting said supporting rod into any one of said tubular objects;

moving the other of said retention members along said supporting rod to place said retention members against opposite ends of said one tubular object;

locking said placed retention members against movement away from each other;

mounting said supporting rod; and

resiliently biasing said supporting rod in an axial direction.

25. An apparatus for releasably retaining any one of several tubular objects of different lengths, comprising in combination:

a supporting rod insertable into any one of said tubular objects;

a pair of mutually adjustable retention members on said supporting rod for releasably retaining any one of said tubular objects therebetween;

means connected between said retention members for selectively locking said retention members against movement away from each other;

means coupled to said supporting rod for mounting said supporting rod; and

means coupled to said supporting rod for resiliently biasing said supporting rod in an axial direction.

4,284,996

DRIVING INK JET RECORDING ELEMENTS

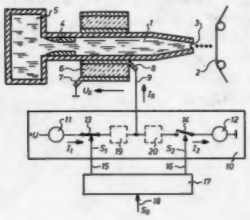
Helmut Greve, Neumuenster, Fed. Rep. of Germany, assignor to Dr.-Ing Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 62,001

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835262

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **7 Claims**



1. In a method for driving an ink jet recording element of the kind comprising a compression chamber for containing the ink, and in which the volume of the compression chamber is altered by means of a piezo-electric transducer to which a control voltage can be applied and wherein the compression chamber will expand if a control voltage is applied in the direction of the polarisation voltage of the transducer and will contract if a control voltage is applied in the opposite direction, the method comprising the steps of

(a) during a preparation phase, in a first defined time interval, applying to the piezo-electric transducer a control voltage in the polarisation direction to expand the compression chamber past its static condition,

(b) during a write phase in a second defined time interval immediately following the first time interval, applying to the piezo-electric transducer a control voltage in said opposite direction to constrict the compression chamber past said static condition, and

(c) during a subsequent regeneration stage in a third defined time interval immediately following said second time interval, applying to said transducer a control voltage in said polarising direction to again expand the compression chamber past its static condition,

the currents of said voltages forcing said expansion and constriction during said phases and time intervals.

4,284,997

STATIC INDUCTION TRANSISTOR AND ITS APPLIED DEVICES

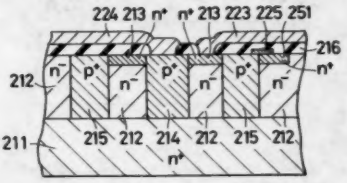
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed Jun. 29, 1978, Ser. No. 920,542

Claims priority, application Japan, Jul. 7, 1977, 52-81796; Jul. 27, 1977, 52-90018; Jul. 29, 1977, 52-91699; Sep. 14, 1977, 52-110914; Sep. 22, 1977, 52-114316; Dec. 20, 1977, 52-154197

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **82 Claims**



1. A semiconductor device formed in a semiconductor body having first and second parallel principle surfaces and including at least one vertical current channel at which a main current is substantially controlled and at which charge carriers constituting said main current are allowed to flow substantially perpendicular to said principal surfaces, comprising:

at least one channel semiconductor region disposed in said semiconductor body to form said at least one current channel therein;

a source semiconductor region for supplying said charge carriers from said channel semiconductor region, disposed at the other end of said channel semiconductor region; and

at least one drain means for retrieving said charge carriers from said channel semiconductor region, disposed at the other end of said channel semiconductor region; and

means for controlling the potential profile in said channel semiconductor region to define said current channel, including a first gate means and a second gate means disposed adjacent to a same portion of said channel semiconductor region and separated from each other,

said current channel being defined at said portion, in said channel semiconductor region partially by said first gate means and partially by said second gate means,

said first gate means being adapted to be connected to a signal source for developing, in said channel semiconductor region, a depletion region with a width depending on a controlling signal supplied from said signal source,

said second gate means being adapted to be connected to a dc bias source for developing, in said channel semiconductor region, a depletion region with a width depending on a dc bias supplied from said dc bias source.

4,284,998

JUNCTION TYPE FIELD EFFECT TRANSISTOR WITH SOURCE AT OXIDE-GATE INTERFACE DEPTH TO MAXIMIZE μ

Noboru Fuse, Kitakyushu; Kenichi Muramoto, Kawasaki; Keizo Tani, and Masaaki Iwanishi, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 768,942, Feb. 15, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,570

Claims priority, application Japan, Feb. 18, 1976, 51-15844

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **13 Claims**

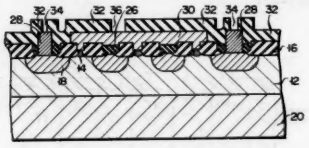
1. A junction type field effect transistor comprising:

a drain region formed of a semiconductor layer of one conductivity type;

a source region constituted by a first layer of said one conductivity type which is formed to a prescribed depth from

the surface of the semiconductor layer at a high concentration of impurity;

an insulation layer formed in the semiconductor layer closely around the source region, with said source region being sufficiently deep with respect to said insulation layer, at least from the surface of said semiconductor layer, to establish triode voltage-current characteristics, and said source region being formed sufficiently shallow



with respect to said insulation layer, at least from the surface of said semiconductor layer, to maximize voltage-amplifying degree μ; and

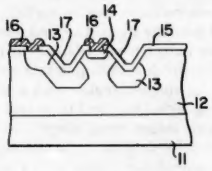
a gate region constituted by a second layer of the opposite conductivity type to the semiconductor layer which is formed in the semiconductor layer to a prescribed depth from the underside of the insulation layer so as to extend from the proximity of the source region away from the source region.

4,284,999

SEMICONDUCTOR DEVICE

Eiichi Iwanami, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 27, 1978, Ser. No. 973,589
Claims priority, application Japan, Dec. 28, 1977, 52/158389
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **6 Claims**



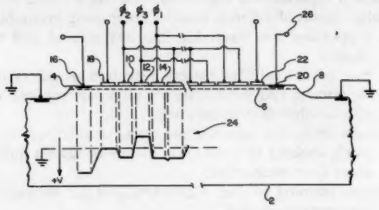
1. An integrated semiconductor junction field effect transistor logic device, comprising: a semiconductor substrate of one conductivity type having a high impurity concentration; a relatively low impurity concentration epitaxial semiconductor layer of the same conductivity type as said substrate formed on said substrate; a first region of the same conductivity type as the substrate formed in a surface portion of said epitaxial layer; at least one groove formed in a surface portion of said epitaxial layer along a length direction of said first region; a second region of opposite conductivity type formed by said groove and in a surface portion of said epitaxial layer around said first region, and having a high impurity concentration; said substrate, said first region, the portion of said epitaxial layer under said first region, and said second region forming respectively the source, drain, channel and gate regions of a vertical junction field effect transistor, whereby gate-drain capacity is reduced.

4,285,000

BURIED CHANNEL CHARGE COUPLED DEVICE WITH SEMI-INSULATING SUBSTRATE

Ira Deyhimy; Richard C. Eden; James S. Harris, Jr., and Lucia O. Bubulac, all of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 12, 1979, Ser. No. 19,807
Int. Cl.³ H01L *29/78, 29/56, 29/06;* G11C *19/28*
U.S. Cl. 357—24 **5 Claims**



1. A charge coupled device comprising:

a substrate of a semi-insulating, semiconductor having a resistivity of at least 10^6 ohm centimeters;

a doped layer of said substrate forming a semiconducting charge transport layer of a first conductivity type covering only a portion of a surface of said substrate so that there is an interface on the surface of said device between said charge transport layer and said substrate;

a row of parallel, closely spaced p-n junction gates on said charge transport layer each of said gates overlapping said interface so that charges are confined within said charge transport layer without the need of a channel stop because of the resistivity of said substrate;

input means for injecting a signal into said charge transport layer under one of said gates; and

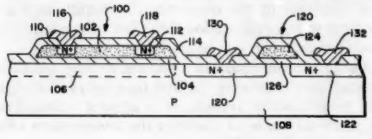
output means for detecting said signal from said charge transport layer.

4,285,001

MONOLITHIC DISTRIBUTED RESISTOR-CAPACITOR DEVICE AND CIRCUIT UTILIZING POLYCRYSTALLINE SEMICONDUCTOR MATERIAL

Levy Gerzberg, Palo Alto, and James D. Meindl, Los Altos, both of Calif., assignors to Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.

Filed Dec. 26, 1978, Ser. No. 972,738
Int. Cl.³ H01L *27/04, 27/13, 29/94*
U.S. Cl. 357—51 **12 Claims**

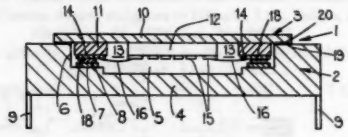


9. A distributed resistor-capacitor device comprising a substrate, a doped polycrystalline semiconductor resistive material on said substrate, a dielectric layer over said resistive material, a conductive layer over said dielectric layer, first and second contacts to said resistive material, and a capacitor contact to said conductive layer.

4,285,002
INTEGRATED CIRCUIT PACKAGE

William Campbell, Oldham, England, assignor to International Computers Limited, London, England

Filed Jan. 16, 1979, Ser. No. 3,954
Claims priority, application United Kingdom, Jan. 19, 1978, 2169/78
Int. Cl.³ H01L 23/10; H01R 43/02
U.S. Cl. 357—74 5 Claims



1. A large scale integrated circuit package including;

a main body structure having a plurality of external circuit connection pins, a recess bounded by a peripheral wall and a first pattern of conductive tracks positioned in the recess and being electrically connected to the circuit connection pins; and

a lid structure of thermally conductive material closing the recess, the lid structure carrying a second pattern of conductive tracks complementary to said first pattern on an inner surface thereof, a large scale integrated circuit element having connection pads, the circuit element being attached to said inner surface of the lid structure and extending into the recess, electrical conductors providing connections between the connection pads of the large scale integrated circuit and the second pattern of conductive tracks and connector elements providing electrical connections between the first and second conductive patterns.

3. A method of manufacturing a large scale integrated circuit package including the steps of;

providing a main body structure having a plurality of external circuit connection pins, a recess bounded by a peripheral wall and a first pattern of outwardly facing conductive tracks positioned in the recess and being electrically connected to the connection pins;

providing a lid structure of thermally conductive material, mounting on a surface thereof a large scale integrated circuit element having connection pads so that when the lid structure is secured to the main body structure the circuit element extends into the recess, providing a second pattern of conductive tracks complementary to said first pattern on said surface and electrically connecting the connection pads of the circuit element to the second pattern of conductive tracks;

positioning the lid structure relative to the main body structure so that the first and second patterns of conductive tracks are aligned in face-to-face relationship;

placing a deformable connector element between corresponding conductive tracks of the first and second patterns; and

securing the lid structure to the main body structure so that a compression bond is formed between said corresponding conductive tracks by deformation of the connector elements.

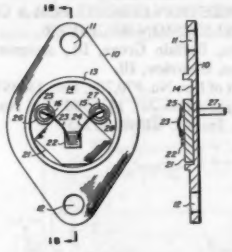
4,285,003
LOWER COST SEMICONDUCTOR PACKAGE WITH GOOD THERMAL PROPERTIES

Stanley Gaicki, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1979, Ser. No. 21,865
Int. Cl.³ H01L 23/02, 23/12, 23/48
U.S. Cl. 357—81 8 Claims

1. In a case for semiconductor devices having a mounting base having at least one aperture through which a lead passes, a pedestal to which semiconductor die are attached, and a cap for enclosing said die, the improvement comprising:

a thinned region in said base for reducing the thickness of said base in a central area wherein said thinned region is

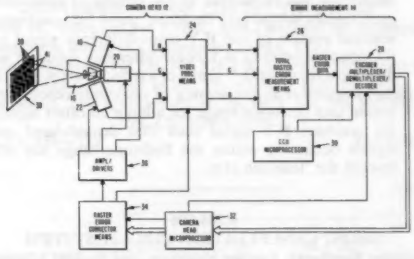


greater than 5 mils (0.13 mm) thickness, said pedestal being 15–60 mils (0.38–1.5 mm) thick and smaller in area than said thinned region and being attached to said base in said central area.

4,285,004
TOTAL RASTER ERROR CORRECTION APPARATUS AND METHOD FOR THE AUTOMATIC SET UP OF TELEVISION CAMERAS AND THE LIKE

Eric F. Morrison, Redwood City, and Anthony E. Zank, Simi Valley, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 25, 1980, Ser. No. 124,370
Int. Cl.³ H04N 9/04, 9/62
U.S. Cl. 358—10 39 Claims



1. A total raster error correction system for correcting all raster related errors in image pickup devices in a television camera, wherein the latter includes a central control unit and a remotely locatable camera head system each having respective microprocessor means and sync circuit means, wherein the camera head system includes scan control means integral with the image pickup devices, and video processing means coupled to the pickup devices for generating selected video signals corresponding to a video picture, comprising the combination of;

error measurement means disposed within the central control unit and coupled to the video processing means for automatically electronically measuring the total raster errors with respect to given electronic references, and for generating digital error data commensurate with the total raster errors for subsequent storage within the camera head system; and

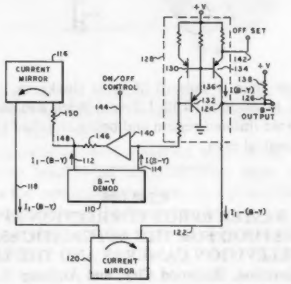
error correction means integral with the camera head system and operatively coupled to the error measurement means, for storing the digital total raster error data, for automatically and selectively retrieving in real time the total raster

errors, and for selectively supplying in real time to the scan control means and to the video processing means error correction signals indicative of the total raster errors independently of the central control unit.

4,285,005
COLOR CORRECTION CIRCUIT FOR A COLOR TELEVISION RECEIVER

Gopal K. Srivastava, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 970,700, Dec. 18, 1978, Pat. No. 4,219,840. This application Jul. 14, 1980, Ser. No. 167,989
Int. Cl.³ H04N 9/535
U.S. Cl. 358—28 **5 Claims**



1. In a color television receiver having at least a B-Y demodulator for developing a pair of color-difference output signals of opposite polarity, and having a network for sensing color-difference signals representative of hues within a range of fleshtones, a color correction circuit comprising:

means coupled to opposite polarity outputs of the B-Y demodulator and responsive to the sensing of color-difference signals within said fleshtone range for combining a selected portion of one B-Y color-difference signal with the opposite polarity B-Y color-difference signal so as to develop a resultant B-Y signal of a reduced amplitude; and

means responsive to the sensing of color-difference signals within said fleshtone range for adding an offset signal to the resultant B-Y signal such that demodulated color signals occurring within the fleshtone range are offset toward the fleshtone axis.

4,285,006
GHOST CANCELLATION CIRCUIT SYSTEM

Koichiro Kurahashi; Yoshiro Nakajima, and Yoshiki Mizutani, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Amagasaki, Japan

Continuation-in-part of Ser. No. 903,737, May 8, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 61,021
Claims priority, application Japan, Jul. 22, 1977, 52-88633; Feb. 8, 1978, 53-13951; Feb. 8, 1978, 53-13952
Int. Cl.³ H04N 5/21
U.S. Cl. 358—35 **9 Claims**

1. A ghost cancellation system comprising:

a carrier extracting circuit for generating a reference carrier having a reference phase out of a composite wave including a direct wave and a ghost wave;

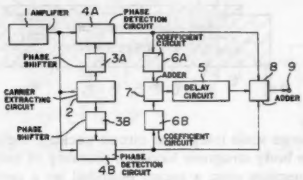
phase shifting means for generating detection axis signals having a phase independent of the relative phase difference between the reference phase of the reference carrier and the phase of the ghost wave;

a pair of phase detecting circuits each coupled to the composite wave and a respective detection axis signal for detecting the phase of the composite wave relative to the detection axis signals and for producing output signals based thereon;

at least two coefficient circuits coupled to the output of respective of said phase detecting circuits for producing respective output signals corresponding to coefficient multiples of the output signals of said phase detecting circuits;

at least one first adding circuit coupled to the output signals of the at least two coefficient circuits for producing at least one output signal based on the sum thereof;

delay circuit means coupled to the at least one output signal of said at least one first adding circuit for delaying said at least one output signal thereof a time substantially equal to



the delay time of the ghost wave to produce at least one compensation signal based on the delayed at least one output signal of said at least one first adder;

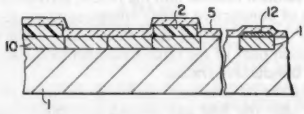
a second adder circuit for combining the output signal of at least one of the phase detector circuits and the compensation signal of the delay signal means; and

wherein the coefficients of the coefficient circuits are set in dependence on the phase detection of said phase detecting circuits and the amplitude and phase of the ghost wave, to thereby cancel the in-phase component and the orthogonal component of the ghost wave.

4,285,007
COLOR SOLID-STATE IMAGER AND METHOD OF MAKING THE SAME

Toshio Nakano; Tadao Kaneko, both of Tokyo; Michiaki Hashimoto, Yono; Yoshio Hatano, Urawa; Haruo Matsumaru, Tokyo; Akira Sasano, Tokyo, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1980, Ser. No. 123,085
Claims priority, application Japan, Feb. 26, 1979, 54-20801
Int. Cl.³ H04N 9/04
U.S. Cl. 358—44 **8 Claims**



1. A color solid-state imager in which color-decomposing filters are formed, via layers of an organic, high molecular material, over a semiconductor body having at least a light detector portion in which are arrayed a plurality of light detector elements.

4. A method of making color solid-state imagers comprising: a step for forming a color-decomposing filter layer having a predetermined shape and predetermined spectral characteristics over a semiconductor body which has at least a light detector portion in which a plurality of light detector elements are arrayed; a step for forming a layer of a transparent radiation-sensitive organic high molecular material; a step for forming a color-decomposing filter layer having a predetermined shape and predetermined spectral characteristics; and a step for forming a layer of a transparent radiation-sensitive organic high molecular material; the above-mentioned steps being repetitively carried out to successively form filter layers of desired shapes which have been dyed, and the uppermost layer

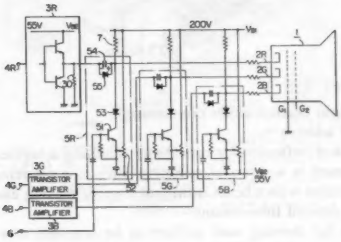
being made of a transparent radiation-sensitive organic high molecular material, said method of making color solid-state imagers further comprising: a step for irradiating predetermined portions of said laminated filter layers with a predetermined radiant ray; and a step for processing said laminated filter layers.

4,285,008

COLOR PICTURE REPRODUCING DEVICE

Michitaka Osawa; Syuzo Matsumoto, and Hitoshi Maekawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,735
Claims priority, application Japan, Nov. 15, 1978, 53-139895
Int. Cl.³ H04N *5/68, 9/18*
U.S. Cl. 358—65 **7 Claims**



1. A color picture reproducing device comprising:

(a) a three-electron gun color picture tube having first to third grids biased by the same potential and first to third cathodes;

(b) first to third transistor amplifiers for supplying first to third primary color signals to said first to third cathodes, respectively;

(c) first to third adjusting means connected to the first to third cathodes for independently adjusting the DC levels of the signals supplied to the respective cathodes;

(d) wherein each of said first to third adjusting means is a DC reproducing circuit having a capacitor inserted between a transistor amplifier and a respective cathode, a variable voltage source, and a switch connected between a junction point between the cathode and the capacitor, and the variable voltage source, which is turned on during the flyback period and is turned off for the scanning period.

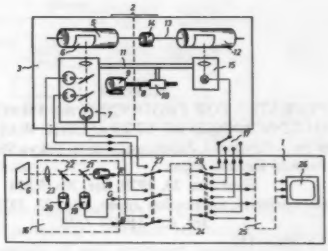
4,285,009

APPARATUS FOR PRODUCING CORRECTED COLOR CHROMATIC COMPONENTS

Siegfried Klopsch, Probsteierhagen, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 770,192, Feb. 18, 1977, abandoned. This application Oct. 11, 1979, Ser. No. 83,985
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607623
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—76 **6 Claims**

1. Apparatus for producing corrected color chromatic component separations for multicolor printing, including linewise scanning of an original picture and linewise recording of a picture in the form of color chromatic component separations with interposed color correction, including a color correction means consisting of an electronic color camera for initially scanning an original picture which produces first three color signals, a color viewing monitor which receives second three color signals for monitoring the signal images, an adjustable analog color correction computer connected to the output of said camera to receive said first three color signals therefrom and said color correction computer correcting the trichromatic first three color signals supplied by said camera and producing four corrected color signals, a color converter connected between said color correction computer and said monitor and receiving said four color signals and producing said second three color signals for adjusting fixed parameters for the respective printing process and for adaptation to the colors of the screen luminescent materials of the monitor, a scanner for scanning of the original picture a second time and



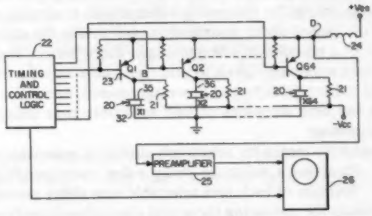
producing third three color signals, a recording unit adapted to receive said four color signals for recording the color chromatic component separations, and switching means for switching said color correction computer after the correction adjustment has been completed from the color correction means to connect the computer between said scanner and said recording unit such that said color correction computer is connected in the signal path both during monitoring and recording.

4,285,010

ULTRASONIC INTERROGATING SYSTEM AND EXCITER-DETECTOR CIRCUIT THEREFOR

Martin H. Wilcox, Cave Creek, Ariz., assignor to Advanced Diagnostic Research Corporation, Tempe, Ariz.

Continuation-in-part of Ser. No. 576,874, May 12, 1975, which is a continuation-in-part of Ser. No. 410,437, Oct. 29, 1973, abandoned. This application Oct. 25, 1977, Ser. No. 845,223
Int. Cl.³ H04N *5/30*
U.S. Cl. 358—112 **33 Claims**



1. An ultrasonic interrogating system comprising:

a plurality of ultrasonic transducers;

means for selectively exciting the transducers electrically in a predetermined sequence to produce ultrasonic emission;

raster scanned display means;

a single preamplifier having an output connected to the display means and an input;

means for coupling the respective excited transducers to the input of the preamplifier in the predetermined sequence to transmit to the display means echoes of the ultrasonic emission of the respective excited transducers returned to said respective excited transducers;

a single tuning inductor effectively connected in parallel

with the excited transducers as to echoes of the ultrasonic emission; and

means for synchronizing the display means of the coupling means to present the echoes of the ultrasonic emission on the display means.

4,285,011

APPARATUS FOR PRODUCING AN IMAGE OF AN OBJECT SCANNED BY ULTRASONIC WAVE BEAMS

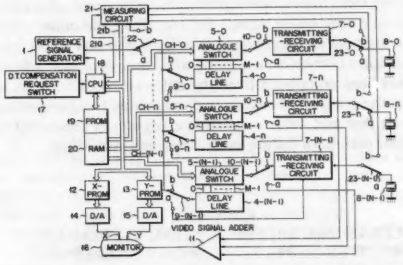
Ichiro Sato, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 23, 1979, Ser. No. 5,871

Claims priority, application Japan, Jan. 23, 1978, 53-6048

Int. Cl.³ H04N 7/18

U.S. Cl. 358—112 **4 Claims**



1. In an apparatus for producing an image of an object scanned by ultrasonic wave beams and comprising a plurality of electro-acoustic transducer means arranged in a prescribed manner for irradiating ultrasonic wave beams toward an object under examination and for converting ultrasonic waves reflected from the object into corresonding video signals, means for generating reference signals for activating said transducer means, means for processing video signals to display an image of the object under examination, and means for delaying for one of a plurality of selectable time delay periods the transfer of said reference signals to said transducer and the transfer of said video signals to said processing means, means for calibrating the time durations of said selectable time delay periods comprising:

memory means for selectively storing in associated memory locations a reference delay value corresponding to the duration of each said selectable time delay periods;

means for measuring the actual time delay periods provided by said delaying means; and

central processor means coupled to said memory means and said measuring means for (1) converting said measurements of said actual time delay periods into corresponding comparison values, (2) determining an ideal time delay value corresponding to each of said selectable time delay periods, (3) comparing a said ideal time delay value to each of said comparison values, (4) storing said comparison value most nearly equal to a said compared ideal time delay value into said memory location associated with the time delay period corresponding to said compared value whereby said memory locations store reference values corresponding to the actual time delay periods provided by said delaying means.

4,285,012

LIGHT BEAM SCANNER

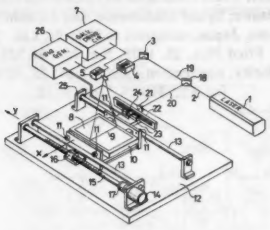
Yuji Ohara, and Masahiro Ohnishi, both of Asaki, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 16, 1979, Ser. No. 67,488

Claims priority, application Japan, Aug. 16, 1978, 53-99886

Int. Cl.³ H04N 1/12

U.S. Cl. 358—293 **13 Claims**



1. A light beam scanner comprising:

a light source;

an optical deflector for repeatedly scanning a surface to be scanned in a series of scanning lines in a predetermined direction with a beam from said source, starting each scan at a desired time instant;

means for moving said surface to be scanned in a linear direction substantially perpendicular to the direction of scanning lines formed on said surface;

means movable with said surface and receiving a beam from said source for producing a signal whenever said surface to be scanned is moved a predetermined distance; and

means for operating said optical deflector in synchronization with said signal.

4,285,013

MOUNTING ASSEMBLY FOR A DEFLECTION YOKE

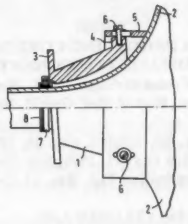
Otto Brunn, Wernau, and Eberhard Nill, Esslingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corp., New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,977

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814575

Int. Cl.³ H01F 7/00; H04N 5/645

U.S. Cl. 358—248 **4 Claims**



1. In a mounting assembly for a ring-shaped deflection yoke surrounding the neck of a cathode-ray tube and expanding toward the screen like a trumpet, with a mounting part provided at the narrower end opening of the deflection yoke and movable on the tube neck and capable of being inclined toward the tube axis, and a supporting part provided at the expanding end opening of the deflection yoke, wherein the improvement comprises the supporting part constituted by a ring around the front portion of the deflection yoke which ring is supported by and freely movable on the tube cone, spring elements are positioned between the ring and the deflection yoke for forcing

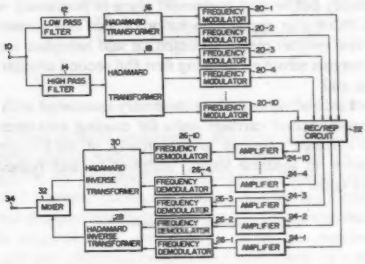
the ring forward against the cone, and the ring is mounted on the deflection yoke so as to be free to move axially therealong and swivel thereon and to be lockable in position.

4,285,014

CHANNEL DIVISION RECORDING/REPRODUCING APPARATUS

Ken Satoh, Akikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,374
Claims priority, application Japan, Mar. 20, 1979, 54-32950
Int. Cl.³ H04N *5/79*
U.S. Cl. 360—22 **4 Claims**



1. A channel division recording/reproducing apparatus comprising:

means for dividing an input signal into first and second frequency signals;

first orthogonal transforming means for transforming said first frequency signal into narrow band signals for a plurality of channels;

second orthogonal transforming means for transforming said second frequency signal into narrow band signals for a plurality of channels, a narrow band signal on the channel of a minimum frequency band being equal in frequency of said first frequency signal;

record means for frequency modulating output signals of said first and second orthogonal transforming means for the respective channels and recording them on a recording medium; and

reproducing means for demodulating the recorded signals for the respective channels and, after subjecting the resultant demodulated signals to an orthogonal inverse transformation, reproducing said first and second frequency signals.

4,285,015

METHOD AND APPARATUS FOR LOCATING A MOVABLE SERVO CONTROLLED MEMBER DURING POSITION SIGNAL DROP-OUT

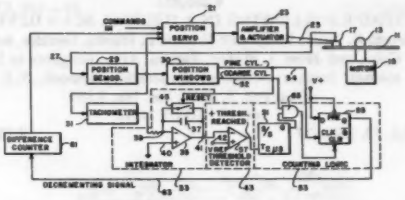
Andrew M. Rose, Mountain View; Frank J. Sordello, Los Gatos, both of Calif., and James J. Touchton, Boulder, Colo., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,304
Int. Cl.³ G11B *21/08*
U.S. Cl. 360—78 **16 Claims**

1. In a position servo system of the type having a member movable longitudinally and transversely with respect to a plurality of servo tracks in which member position and velocity transverse to said tracks is represented by position and velocity signals, the system having a track counter to be decremented by the member crossing each track, a circuit for use in track counting in the event of position signal drop-out comprising,

integrator means having an input and an output, said input connected to receive and integrate a velocity signal to produce a simulated position signal, said integrator means having a reset switch operable in response to a reset command,

window circuit means, connected to said reset switch, for generating coarse and fine cylinder signals for a servo track, a fine cylinder signal being directed to said reset switch as a reset command for said integrator means so that a simulated position signal is generated by said integrator means for each servo track,



detector means connected to the output of said integrator means for generating a threshold reached signal representing the passage of said simulated position signal past a preset threshold level corresponding to a characteristic of each servo track, and

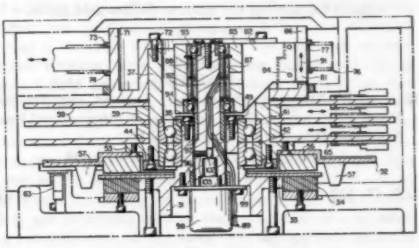
counting logic means for decrementing a track counter, said counting logic means connected to said threshold detection means and operable in response to said threshold reached signal.

4,285,016

DISC, TAPE AND HYBRID DISC-TAPE MEMORY APPARATUS AND DRIVE ASSEMBLY

Paul A. Gilovich, Saratoga, Calif., assignor to Microcomputer Systems Corp., Sunnyvale, Calif.

Filed Jun. 4, 1979, Ser. No. 45,215
Int. Cl.³ G11B *5/55, 21/08*
U.S. Cl. 360—84 **13 Claims**



1. A magnetic memory comprising a base plate,

a spindle secured to said base extending upwardly therefrom,

an electric motor stator secured to said base,

a support hub supported by said spindle,

bearing means disposed between said hub and spindle to support said hub on the spindle and allow the hub to rotate relative to said spindle,

an electric motor rotor mounted on said hub in cooperative relationship to said stator whereby to rotate the hub relative to the spindle,

a tape receiving and supporting drum mounted on said hub, said tape receiving and supporting drum including tape guide means whereby the tape is guided over the surface of said drum and wrapped over a predetermined circumference of the drum,

a magnetic head drive and support assembly mounted on said spindle to support magnetic heads with their record-

ing gap in cooperative relationship with the tape on said drum and for rotation with said drum, said assembly including means to move said heads axially with respect to the drum whereby said heads read and write longitudinal tracks of predetermined length laterally spaced next to one another in a record block on said tape, said block having a predetermined number of laterally spaced record tracks.

4,285,017

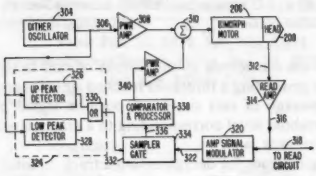
STRIPE FOLLOWING IN A HELICAL SCAN DEVICE

Nelson K. Arter, Longmont; Francis E. Hauke, Boulder, both of Colo., and Jesse A. Weber, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,315

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **9 Claims**



2. Method for enhancing track following in a helically scanned magnetic tape device comprising of the following steps in combination:

positioning a magnetic head within the vicinity of a data track on the tape;

dithering the head to trace a nonlinear path, said nonlinear path being relative to the data track and in a direction orthogonal to the direction of normal head travel;

monitoring the head output signals and generating digital signals representative of the maximum and minimum peaks of the nonlinear path; and

correlating the digital signals to generate one or more error signals for driving the head to follow said track.

4,285,018

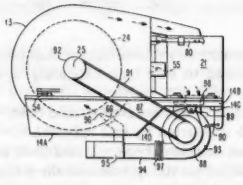
DISK FILE

Richard B. Mulvany, Winchester, England and Tulsidas R. Patel, Bell Canyon, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,404

Int. Cl.³ G11B *5/48, 23/02*

U.S. Cl. 360—98 **2 Claims**



1. A dual actuator disk file comprising an HDA assembly and a disk drive assembly,

said HDA assembly being separable as a unit from said drive assembly and comprising at least one magnetic disk,

a spindle for mounting said disk,

a two part frame for mounting said spindle for rotation of said disk about an axis which is substantially horizontal and for supporting said HDA assembly in operating position on said drive assembly,

first and second magnetic head transducer carriage units each of which comprises a movable carriage portion and a stationary way portion and at least one head-arm member attached to each said carriage portions, and

means mounting said way portions on opposed sides of said frame to cause the respective carriage portions to move along parallel paths which are normal to the axis of said spindle and parallel to a horizontal plane containing said spindle axis and disposed on opposite sides of said at least one disk whereby the respective head-arm members are positionable independently of each other to transducing relationships with opposite surfaces of said at least one disk,

said drive assembly comprising a baseplate having a U-shaped cross-section into which a portion of said HDA assembly below said horizontal plane is positioned when said HDA is in operating position on said drive assembly,

voice coil magnet means mounted on said baseplate including magnet structure defining first and second annular flux gaps, and

first and second voice coils permanently associated with said first and second carriage units for causing movement of said carriage portions independently of each other in response to separate signals supplied to said respective voice coils.

4,285,019

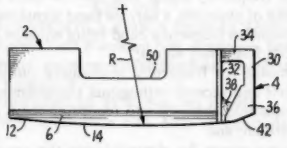
CONTOURED MAGNETIC RECORDING HEAD/SLIDER ASSEMBLY

John C. Scott, Saratoga, and Raymond Herrera, Santa Clara, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Mar. 10, 1980, Ser. No. 129,142

Int. Cl.³ G11B *5/60, 17/32, 21/20*

U.S. Cl. 360—103 **6 Claims**



1. A magnetic head/slider assembly for flying a magnetic head on a fluid bearing relative to magnetic recording media moving in a predetermined direction in the fluid, comprising

a slider body having leading and trailing edges with respect to such relative movement and a bottom surface facing said media and extending longitudinally of said slider body with at least a portion of said bottom surface forming a fluid bearing surface which is convexly curved in the longitudinal direction from said trailing edge to a point forward thereof, and

at least one magnetic head including a read/write gap affixed to said slider body and extending rearwardly of the trailing edge thereof, the bottom surface of said head being convexly curved in said longitudinal direction from said slider body trailing edge to a point rearward thereof,

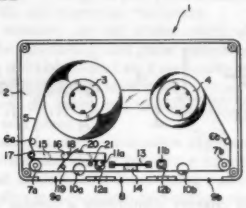
said head/slider assembly being supported such that the portion of said assembly closest to said media when the movement of said media is stopped is a portion of said slider body forward of said trailing edge, whereby the magnetic head remains spaced above the media when the media-contacting portion of the assembly is resting on the media surface to protect the read/write gap from contact with the media.

4,285,020

TAPE CASSETTE

Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 113,657
Claims priority, application Japan, Mar. 24, 1979, 54/38431
Int. Cl.³ G11B 23/08
U.S. Cl. 360—132 11 Claims



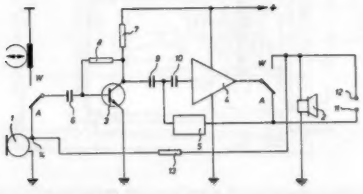
1. A tape cassette containing a magnetic tape having a magnetizable surface which is formed by a thin metal film; characterized by the provision of a discharge, ground connection member disposed within the cassette and having a conductive contact disposed for abutment against the magnetizable surface of the magnetic tape, said ground connection member being brought into electrical contact with a member of a magnetic recording and reproducing apparatus which represents the ground potential thereof whenever the cassette is loaded on the magnetic recording and reproducing apparatus.

4,285,021

CIRCUIT FOR GENERATING AN AUDIBLE SIGNAL IN TAPE RECORDERS AT THE TAPE END

Hans-Georg Rimkus, Nuremberg, Fed. Rep. of Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,741
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809978
Int. Cl.³ G11B 15/06
U.S. Cl. 360—137 2 Claims



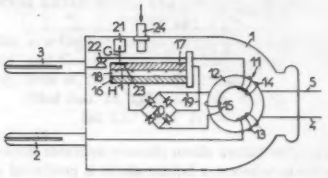
1. In a magnetic tape recorder having a microphone, recording amplifier and loudspeaker, an audible tape end signal generating circuit for use with a magnetic tape having a foil coating at the end thereof, the improvement comprising: a pair of contacts adapted to be bridged by said foil coating, said contacts when bridged completing a first loop connecting the loudspeaker directly to the output of said amplifier and simultaneously completing a second loop connecting the output of said amplifier to the microphone output, neither of the loops defining an acoustic path for said end of tape signal and said end of tape signal is generated by said amplifier oscillating so that the microphone is not an essential constituent of said audible end of tape signal generating circuit.

4,285,022

DEVICES ADAPTED TO DETECT VARIATIONS IN MAGNETIC FLUX NOTABLY CIRCUIT BREAKERS

Jacques Lewiner, 4, rue Bory d'Arnex, 92210 Saint-Cloud; Gerard Dreyfus, Rue du Viaduc, Villebon Sur Yvette, 91120 Palaiseau, and Didier Perino, 10, rue de Bellevue, 92150 Suresnes, all of France

Filed Jul. 17, 1979, Ser. No. 58,261
Claims priority, application France, Jul. 25, 1978, 78 22016
Int. Cl.³ H02H 3/33
U.S. Cl. 361—45 15 Claims



1. Device for detecting variations in magnetic flux so that the passage through a given threshold by the amplitude of such a variation per unit time is manifested by the movement of an element adapted to trigger an action, said device comprising a winding arranged and mounted so that the variation in magnetic flux to be detected generates by induction at the terminals of said winding an electrical voltage V, said device comprising in addition two electrodes forming a capacitor, one of which electrodes is movable with respect to the other, an electret interposed between these two electrodes and whose charge produces a field providing an electrostatic force H on said electrodes tending to bring them mutually together, means for forming a rectified voltage U from said voltage V and for applying this voltage U between the two electrodes in a direction such that the field which results therefrom is opposite that generated by the electret and hence tends to reduce the force H, and means for urging the movable electrode, in a manner which is not reversible without the application of a countervailing external force, with a force G in the opposite direction to the force H, the force G of said urging means and the charge of the electret being selected so that when the voltage U exceeds a predetermined threshold U_o corresponding to the level to be detected the movable electrode is caused to move from an initial rest position to an active position, the triggering of said action being responsive to such movement of the movable electrode.

4,285,023

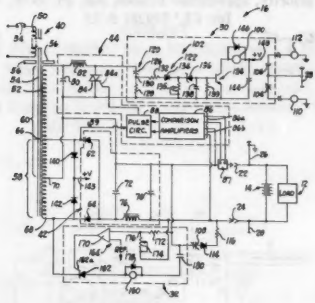
RECTIFIER SYSTEM WITH FAILURE ALARM CIRCUITRY

Zissis Kalivas, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Mar. 11, 1980, Ser. No. 129,355
Int. Cl.³ H02H 3/20; G08B 21/00
U.S. Cl. 361—91 14 Claims

1. In a rectifier unit having a ferroresonant transformer and an associated ferroresonance control circuit for simulating saturation of the transformer core to control the rectifier out-

put, the ferroresonance control circuit comprising a transformer secondary section and circuit elements coacting with said transformer secondary section to simulate saturation of said transformer core, said circuit elements including an electronic controller element operable to alter the impedance of said ferroresonance control circuit and thereby govern the rectifier unit output;



(a) a rectifier failure alarm element operable between a first condition wherein a failure alarm is produced and a second condition; and,

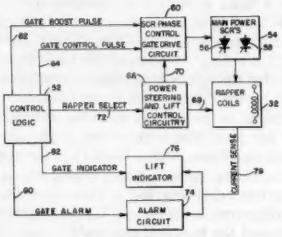
(b) detector circuitry coupled between said ferroresonance control circuit and said failure alarm element, said detector circuitry effective to detect a ferroresonance control circuit condition wherein the rectifier output is minimized and to effect operation of said alarm producing element to its first condition for producing a failure alarm.

4,285,024

ELECTROSTATIC PRECIPITATOR RAPPER CONTROL SYSTEM RAPPER PLUNGER LIFT INDICATOR

William W. Andrews, Cranford, N.J., assignor to Research-Cottrell, Inc., Somerville, N.J.

Filed May 29, 1979, Ser. No. 43,141
Int. Cl.³ B03C *3/76*
U.S. Cl. 361—160 **11 Claims**



1. A rapper plunger displacement indicator for an electrostatic precipitator rapper control system of the type which supplies a pulse of controlled energy to a rapper generally having a movable plunger biased towards an impact and resting position and an electromagnetic means for displacing the plunger away from the impact and resting position in response to the controlled energy pulse and then releasing the plunger, said displacement indicator comprising:

means for sensing current supplied to the rapper electromagnetic means; and

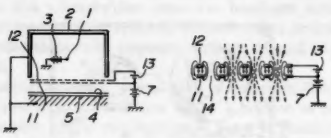
means for integrating the sensed current with respect to time over the period of the pulse of controlled energy, the result of the integration being indicative of plunger displacement.

4,285,025

CORONA CHARGER

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,972
Claims priority, application Japan, May 31, 1978, 53-64378
Int. Cl.³ H01T *19/00*
U.S. Cl. 361—230 **7 Claims**



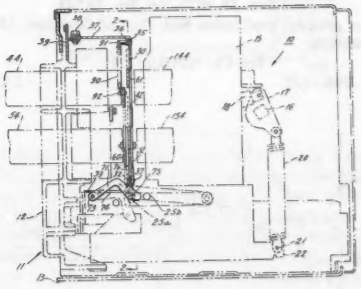
1. A corona charger comprising a corona wire, a corona shield member having an opening facing to the objective surface to be charged, a grid electrode having a number of small openings and provided in said opening, a means for applying corona discharge voltage to said corona wire, and a means for applying a bias voltage to said grid electrode, wherein: a separate grid electrode is provided having substantially identical configuration with said grid electrode and arranged in parallel and adjacent to said grid electrode, so that the small openings of the two grid electrodes are aligned together with respect to corona ion stream, and a means for applying a bias voltage between the two grid electrodes is provided so that an electric field is formed therebetween to accelerate corona ion stream of desired polarity to easily pass through said grid electrodes.

4,285,026

PARALLEL PLANE SHUTTER FOR LK BREAKER

Challiss I. Clausing, Marlton, N.J., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 13, 1979, Ser. No. 66,189
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—345 **8 Claims**



1. A circuit breaker cubicle having a rear wall and a plate positioned at said rear wall, said circuit breaker cubicle having stationary connector members accessible at said plate in said rear wall, said plate at said rear wall having a plurality of openings registering individually with said connector members, the plurality of openings corresponding in position and number to said stationary connectors;

said stationary connectors being arranged in two horizontal rows one of said rows comprising a plurality of upper connectors the other of said rows comprising a plurality of lower connectors; said openings in said plate registering with said connectors comprising corresponding upper openings and lower openings;

and a pair of shutters slidably positioned at said plate, said shutters comprising an upper shutter and a lower shutter;

said upper shutter having openings registrable with said upper openings in said plate for said upper connectors and said lower shutter having openings in said plate for said lower connectors; said shutters being positioned parallel to said plate and slidable with respect thereto;

means for normally positioning said shutters in position where the openings therein are not in registry with the corresponding openings in said plate and therefore not in registry with said connector members;

an actuator member carried within said cubicle located adjacent the position of said plate; said actuator member comprising a lever pivoted on a stationary portion of said cubicle; one end of said lever being connected to one of said shutters, the other end of said lever extending forwardly of said plate;

a circuit breaker having an extension engageable with said actuator when said circuit breaker is moved toward the rear of said cubicle, said lever being rotated when said circuit breaker is moved into said cubicle toward the rear of said cubicle to move at least one of said shutters in a direction to register the openings in said shutter with the openings in said plate for said back connectors;

and a link connection between said one shutter connected to said actuator and the other shutter;

said link connection being pivotally mounted on stationary pivots on said plate with the opposite ends thereof being pivotally connected to said lower shutter and said upper shutter;

the movement of said lower shutter in one direction causing the movement of the other shutter in the opposite direction thereby causing the shutters to move simultaneously when the actuator member is moved in one direction to expose the openings in said plate and make the connectors accessible; and movement of said shutters simultaneously toward each other blocking said openings in said plate.

4,285,027

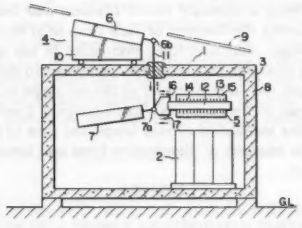
COOLING SYSTEM

Shigeru Mori, Sakai, and Katsumi Sakitani, Kawachinagano, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka and Nippon Electric Company Limited, Tokyo, both of, Japan

Filed Jan. 12, 1979, Ser. No. 3,085

Int. Cl.³ H02B *1/00*; F28D *21/00*

U.S. Cl. 361—385 **9 Claims**



1. A cooling system for cooling a finite space defined by a building structure for accommodating a heat-generating body, said building structure being adapted to be located in a geographical region where a large difference is observed between maximum daytime and minimum nighttime temperatures, said cooling system comprising;

a first heat exchanger disposed outside said space;

a second heat exchanger disposed inside said space at a level lower than said first heat exchanger;

a heat storage means disposed inside said space at a level intermediate between said first and second heat exchangers;

a conduit means for constituting a closed fluid path linking and extending into said first and second heat exchangers and said heat storage means;

a condensable refrigerant filling and flowing through said fluid path depending on the temperature difference between said space and outside thereof, said refrigerant being capable of evaporating through heat absorption at a temperature higher than a value preset for said space, and of being liquefied through heat discharge at a temperature lower than said maximum daytime temperature; and

a heat storing agent charged in said heat storage means in contact with said fluid path, said heat storing agent being capable of being solidified through heat discharge when cooled during nighttime by said refrigerant flowing thereinto after being cooled at said first heat exchanger, and of being liquefied through heat absorption when heated during daytime by said refrigerant heated due to said heat generating body.

4,285,028

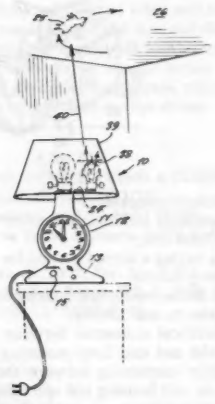
BEDROOM LAMP WITH CLOCK OPERATED LAMP SWITCH

Glen Sundin, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Jun. 15, 1979, Ser. No. 48,720

Int. Cl.³ F21V *21/30*

U.S. Cl. 362—35 **3 Claims**



1. A bedroom lamp with clock operated lamp switch, comprising in combination, an electric alarm clock having a clock mechanism said clock being in a case integral with a lamp base, a first lamp in a socket upon said lamp base, said first lamp being in a circuit interrupted by a first switch positioned for being automatically closed by a first lever of said mechanism when an alarm of said clock is sounded, and said bedroom lamp additionally including image producing means on a ceiling of a bedroom, said mechanism controlling operation of said means.

4,285,029

SELF-LUMINOUS LIGHTING SYSTEM

Marshall W. McCoy, Tucson, Ariz., assignor to American Atomics Corporation, Tucson, Ariz.

Filed Apr. 18, 1979, Ser. No. 31,075

Int. Cl.³ F21V *9/16*

U.S. Cl. 362—84 **16 Claims**

1. A self-luminous lighting system comprising:

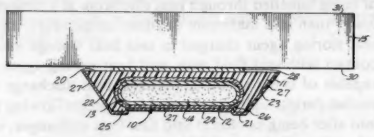
an elongated sealed glass tube filled with a radioactive material;

a phosphor in the tube, the phosphor emitting light from the tube responsive to the radioactive material;

an elongated light diffusive body encapsulating the tube, one

portion of the side surface of the body forming a front face wider than the tube;

a substantially total reflector extending around the entire



side surface of the body except for the front face to reflect the light emitted from the tube toward the front face; and means for changing the distribution of the light emitted from the tube as it leaves the front face.

4,285,030

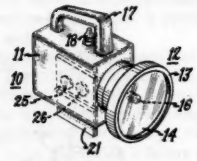
FLASHLIGHT ASSEMBLY

Richard A. Menelly, 10798 4th Ave., Hesperia, Calif. 92345

Filed Nov. 26, 1979, Ser. No. 97,137

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—200 Q **6 Claims**



1. A flashlight comprising:

a lamp assembly including means for mounting a bulb, reflector, and lens;

a housing having a slotted portion for receiving a rectangular battery source;

electrode means within said housing for contacting a pair of electrodes on said battery;

a first electrical connector between one of said housing electrodes and said lamp mounting means and a second conductor connecting between the other of said electrodes on said housing and said lamp mounting means;

a switch electrically connected in series with one of said first and second electrical connectors;

said slotted portion extending through the interior of said housing from a bottom portion of said housing to a top portion;

a guide member extending from an interior portion of said housing for centering said battery within said housing; and

a retaining member attached to an interior portion of said housing for slidingly engaging said battery.

4,285,031

PORTABLE SEARCHLIGHT

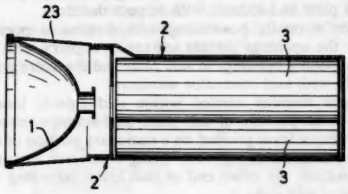
Hans-Jürgen Reiss, Birkenallee 4, 2000 Schenefeld, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 867,929

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—205 **14 Claims**

1. A portable searchlight having a reflector housing, a casing which conforms substantially to at least three circular, cylindrical, batteries positioned adjacent one another along their generatrices so that said casing receiving said batteries has the same center of curvature as the battery surface, said casing having soft, elastic portions at least in the regions between the batteries to provide deformable hand holding areas in the casing, said casing serving to maintain said batteries in positions where the longitudinal axes lie, in cross-section, at the apices of an equilateral triangle, said casing being hermetally sealed to said reflector housing and switch means for control-



ling actuation of said searchlight, said switch means being positioned internally of said casing and along the side thereof said batteries, so as to be operable through said casing.

4,285,032

TUBULAR INCANDESCENT LAMP

Kiyokazu Honda, Zushi; Yoshiji Yoshiike, Yokosuka; Katsuo Muraki, Imabari, and Teruyoshi Kawamata, Touyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Harison Electric Co., Ltd., Imabari, both of, Japan

Filed Jul. 30, 1979, Ser. No. 62,149

Claims priority, application Japan, Aug. 7, 1978, 53/107450[U]

Int. Cl.³ F21S *3/00*

U.S. Cl. 362—224 **2 Claims**

1. A tubular incandescent lamp for illuminating an adjacent surface which comprises:

an elongate transparent envelope; and

a plurality of small lamps linearly arranged and extending lengthwise through the envelope, each of said small lamps containing a helically coiled filament and lead lines for connecting the filament of each lamp to at least one adjacent lamp, said lead lines elongating in use so that said lamps incline in said envelope, and wherein the difference between the inner diameter of the envelope and the outer diameter of the respective small lamps is 2 mm or less to limit the inclination of said lamps and thus to limit variations in intensity of illumination from said lamps onto said surface.

4,285,033

LAMPHOLDER—SWITCH MODULE

James A. Hart, Marshall, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

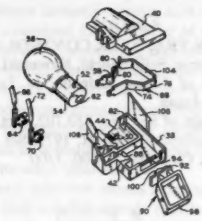
Filed Jul. 25, 1979, Ser. No. 60,666

Int. Cl.³ F21V *23/00*

U.S. Cl. 362—295 **10 Claims**

1. A lamp assembly comprising, in combination, a base having a supporting surface, a pair of lampholder receiving openings defined in said base spaced from each other, a combination lampholder and switch assembly mounted on said base, said lampholder and switch assembly including a pair of resilient cantilever fingers each having a free end, an abutment surface defined on each finger free end, the normal spacing between said fingers' free ends slightly differing from the spacing between said openings whereby upon deflection of said fingers said free ends thereof may be received within said openings

and said abutment surfaces engage said base preventing withdrawal of said fingers from said openings wherein said lamp-



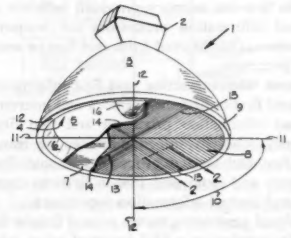
holder and switch assembly is mounted on said base with a snap-in movement.

4,285,034

ENCLOSED INDUSTRIAL LUMINAIRE

Daryl D. Sullivan, Newark, Ohio, assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 13, 1979, Ser. No. 48,287
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—305 **11 Claims**



1. A luminaire for use as a downlight comprising a reflector including an inner reflective surface having a shape corresponding to a surface of revolution and including an opening in the bottom thereof; a lamp positioned within said reflector; a refractive lens positioned below said lamp and in said opening of said reflector; said inner reflective surface is divided into a first reflective portion and a second reflective portion, one of said reflective portions having a metallic specular finish, the remaining portion of said reflective portions having a white finish.

4,285,035

APPARATUS AND METHOD FOR REWRITE DATA INSERTION IN A THREE DESCRIPTOR INSTRUCTION

Jerry L. Kindell, Glendale, and Richard T. Flynn, Peoria, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

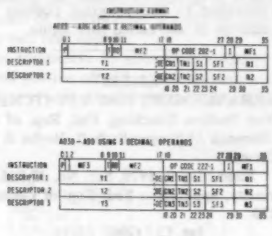
Filed Jan. 2, 1979, Ser. No. 221
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **6 Claims**

1. In a microprogrammed data processing unit wherein, in a three descriptor instruction, a first and a second operand identify locations in memory storing a first and a second operand utilized in said three descriptor instruction, wherein an operand resulting from execution of said instruction can be stored in a resulting memory location identified by a third descriptor of said three descriptor instruction, wherein a group of resulting operand words in said resulting memory location can include non-operand data in the boundary words, apparatus for preserving said non-operand data comprising:

first storage means for storing a first word of said resulting memory location wherein most significant operand data is to be stored, said first word stored during execution of said instruction;

second storage means for storing a second word of said resulting memory location wherein least significant data is to be stored, said second word stored during execution of said instruction;

third storage means for temporarily storing words of said resulting operand; and



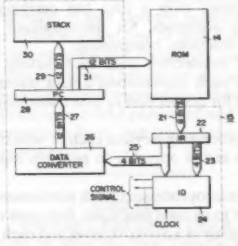
combining means coupled to said first storage means and said third storage means for combining non-resulting operand data in said first storage means with most significant data of said resulting operand when said most significant data of said resulting operand is in said third storage means; said combining means combining non-resulting operand data in said second storage means with least significant data of said resulting operand when said least significant data is in said third storage means.

4,285,036

DATA PROCESSING DEVICE USING A SUBROUTINE CALL INSTRUCTION

Yukio Kitagawa, Yokohama, and Yoshiaki Moriya, Inagi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 22, 1979, Ser. No. 5,212
Claims priority, application Japan, Feb. 2, 1978, 53/10930
Int. Cl.³ G06F *9/40*
U.S. Cl. 364—200 **8 Claims**



1. A data processing device for executing a subroutine CALL instruction to CALL a subroutine, the CALL instruction including an operation code and a memory address to alter the sequence of program execution by setting a program counter of predetermined bit length to the address included in the CALL instruction, said data processing device comprising:

an assembler for converting said operation code and said memory address into object code;

a read only memory for storing instructions or data, said read only memory for selectively outputting said stored instructions or data;

an instruction register connected to said read only memory for storing one of said instructions outputted from said read only memory;

an instruction decoder connected to said instruction register for decoding said instruction stored in said instruction register to produce corresponding control signals;

data converting means connected to said instruction register and said assembler for receiving said object code from said assembler and for converting said object code into an address with a bit length corresponding to said predetermined bit length of said program counter, said program counter being connected to said data converting means for storing said converted address; and

a stack connected to said program counter for storing a return address of said called subroutine.

4,285,037

CIRCUIT ARRANGEMENT FOR A SWITCHING SYSTEM

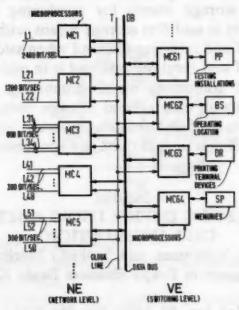
Hanns N. Von Stetten, Soecking, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,506

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827270

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **8 Claims**



1. A circuit arrangement for a switching system having microprocessors operable in a transmitting mode to transmit data and in a receiving mode to receive data and communicating with each other over a data bus carrying information blocks including addresses, for decentralized execution of switch-oriented functions, comprising:

a plurality of connection lines each having a respective address and each representing a data transmission speed and adapted for connection to data transmission/receiving devices;

a plurality of processing devices each of which has a respective address and is operable to perform a predetermined function;

a plurality of microprocessors each autonomously operable with respect to its own functions, first ones of said microprocessors being in a network level and each connected to at least one of said connection lines, and second ones of said microprocessors being in a switching level and connected to respective ones of said processing devices;

a data bus connected to each of said microprocessors for carrying the information blocks including addresses identifying said connection lines and said processing devices; and

a clock pulse bus connected to each of said microprocessors for carrying cyclically occurring clock pulses for rendering a respective microprocessor connected to said data bus and operable in a transmitting mode to transmit an information block and all other microprocessors simultaneously connected to said data bus and operable in a receiving mode to receive an information block,

each of said microprocessors operable only in response to the address of the respective connection line or respective processing device connected thereto for receiving the information block containing the relevant address.

4,285,038

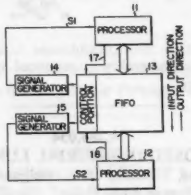
INFORMATION TRANSFER CONTROL SYSTEM

Seigo Suzuki, Yokohama; Seiji Eguchi, Kawasaki, and Yoshiaki Moriya, Inagi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 732,702, Oct. 15, 1976, abandoned. This application Jun. 21, 1979, Ser. No. 50,593

Int. Cl.³ G06F *13/00, 3/00*

U.S. Cl. 364—200 **4 Claims**



1. An information transfer control system for controlling bidirectional transfer of information comprising:

first and second information processors;

a first-in first-out memory provided between said first and second information processors for temporarily storing information transferred from said first or second information processor;

bus means interconnecting said first information processor and said first-in first-out memory and interconnecting said second information processor and said first-in first-out memory whereby information can be transferred from said first and second processors to said first-in first-out memory and from said first-in first-out memory to said first and second information processors;

status signal generating means in said first-in first-out memory for producing a FULL signal when said memory is substantially full of information and an EMPTY signal when said memory has no stored information;

first direction signal generating means for producing a first direction signal specifying that information is to be transferred from said first information processor to said first-in first-out memory and for producing a second direction signal specifying that information is to be transferred from said memory to said first information processor; and

first control means having input terminals connected to said status signal generating means and said first direction signal generating means and an output terminal connected to said first information processor and applying a first data transfer inhibit signal to said first information processor when said FULL signal and said first direction signal are present at the same time and when said EMPTY signal and said second direction signal are present at the same time.

4,285,039

MEMORY ARRAY SELECTION MECHANISM

Garvin W. Patterson, Glendale, and Wolfgang G. Stehr, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 891,085, Mar. 28, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,646

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **7 Claims**

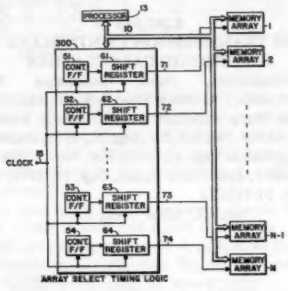
1. An expanded memory system for use in a data processing system including a processor capable of generating a predetermined number of unique memory location addresses, and executing at least one program instruction for controlling the operation of said data processing system, said processor executing said at least one program instruction in one or more

instruction execution cycles, each of said cycles being synchronized with a clock signal generated by said processor, said expanded memory system comprising:

first and second memory arrays, said memory arrays containing a combined total number of uniquely addressable memory locations exceeding said predetermined number, said first memory array storing said at least one program instruction and said second memory array storing data,

a bus for communicating information and control signals between said data processing system and said memory arrays, said information comprising instructions, data, and memory location addresses, and

memory array selection means responsive to said information and said control signals received over said bus for enabling either said first or second memory array to be addressed by said processor, said memory array selection means comprising:



shift register means, said shift register means having a number of stages equal to the number of instruction execution cycles required to execute said at least one program instruction, said shift register means being loadable by said processor with a pattern of data bits over said bus, said shift register means shifting its contents to an output thereof in response to control signals received over said bus, each of said control signals being synchronized with said clock signal, and

means responsive to said shift register means output for enabling either said first or second memory array to be addressed by said processor, said first memory array being enabled when said shift register means output is at a first logical level and said second memory array being enabled when said shift register means output is at a second logical level.

4,285,040

DUAL MODE VIRTUAL-TO-REAL ADDRESS TRANSLATION MECHANISM

Lewis R. Carlson, and Dennis C. Gassman, both of Salt Lake City, Utah, assignors to Sperry Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 848,535, Nov. 4, 1977. This application Jan. 8, 1980, Ser. No. 110,511

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **5 Claims**

3. In a computer system including a first storage means responsive to real addresses; second storage means for storing a virtual address; and a translating mechanism for translating a virtual address to form a real address, said virtual address having first, second and third portions; the improvement comprising:

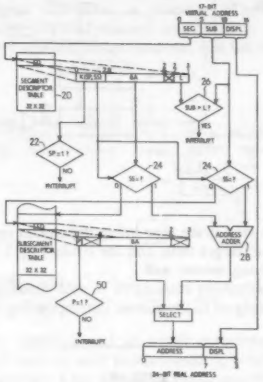
first table storage means for storing a table comprised of a plurality of segment descriptors, each of said segment descriptors having a first field portion and a second field portion;

second table storage means for storing a table comprised of a plurality of subsegment descriptors, each of said subsegment descriptors having field portions;

selecting means responsive to the contents of said first portion of said virtual address stored in said second storage means for selecting a predetermined one of said plurality of segment descriptors from said table stored in said first table storage means;

control means responsive to the contents of said first field portion of said selected segment descriptor for controlling said translating mechanism to operate in either a first or a second mode of operation for translating said virtual address into said real address;

adder means responsive to said control means for adding said second portion of said virtual address to said second field portion of said selected segment descriptor to form a



sum when said translating mechanism is controlled to operate in said first mode;

concatenating means responsive to said control means for concatenating said third portion of said virtual address onto said sum to form said real address when said translating mechanism is controlled to operate in said first mode and responsive to said control means for concatenating said second portion of said virtual address onto said second field portion of said selected segment descriptor for selecting a predetermined one of said plurality of subsegment descriptors when said translating mechanism is controlled to operate in said second mode; and

means for thereafter concatenating said third portion of said virtual address onto a field portion of said selected subsegment descriptor to form said real address in said second mode of operation.

4,285,041

DIGITAL PACING TIMER

Kent G. Smith, 51 W. 83rd St., New York, N.Y. 10024

Filed Jun. 22, 1979, Ser. No. 51,016

Int. Cl.³ G06F *15/42;* **A63B** *5/00*

U.S. Cl. 364—415 **32 Claims**

1. A pacing timer for runners including:

(a) a memory including means for storing information corresponding to

(i) a plurality of stride lengths with the stride lengths corresponding to various speeds of running,

(ii) at least one split distance to be run, and

(iii) at least one target time in which the runner is to complete said split distance;

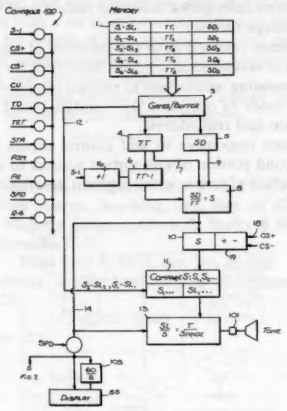
(b) means for determining the speed at which said split distance is to be run from said split distance and target time information stored in said memory;

(c) means for identifying from said plurality of stride lengths

stored in said memory the stride length corresponding to the speed determined by said determining means;

(d) means for defining a period of time corresponding to the runner's stride time, said defining means being operatively responsive to said determining means and said identifying means with said stride time being dependent upon said split distance, said target time, and the stride length identified by said identifying means; and

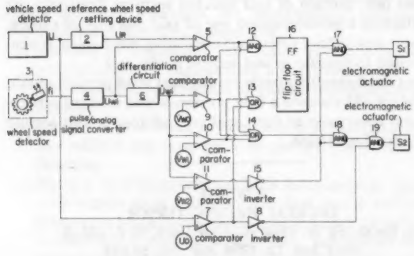
(e) means, operatively responsive to said defining means, for providing a signal to the runner corresponding to said stride time.



4,285,042
ANTISKID BRAKE DEVICE

Taiji Ohmori, Kawagoe, and Makoto Sato, Kamifukuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,696
Claims priority, application Japan, Jul. 21, 1978, 53-89265
Int. Cl.³ B60T *8/10*
U.S. Cl. 364—426 **7 Claims**

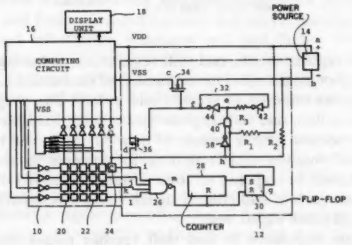


1. An antiskid brake device for use with wheeled vehicles comprising a wheel speed detector detecting the peripheral speed of a wheel in the form of a wheel speed signal (Uwi), a vehicle speed detector detecting the speed of a vehicle in the form of a vehicle speed signal (U), means for setting a reference wheel speed signal (U_R) for comparison with said wheel speed signal (Uwi) on the basis of said vehicle speed signal (U), and comparator means for comparing said wheel speed signal (Uwi) with said reference wheel speed signal (U_R) for controlling brake torque applied to the wheel during braking, said means for setting the reference wheel speed signal (U_R) comprising an input section for receiving, as an input signal, said vehicle speed signal (U) from said vehicle speed detector, a logical operation section for setting a slip rate (λ) of the wheel such that the slip rate is lower when said vehicle speed signal (U) is larger than a prescribed value than when said vehicle speed signal (U) is less than said prescribed value, said logical operation section including means for adding said slip rate (λ) to said vehicle speed signal (U) for determination of said reference wheel speed signal (U_R), and an output section for delivering, as an output signal, said reference wheel speed signal (U_R) as determined by said logical operation section.

4,285,043
POWER TRANSMISSION CONTROLLER FOR ELECTRONIC CALCULATORS

Shintaro Hashimoto, Nara; Sadakatsu Hashimoto, Yamatokoriyama, and Isamu Washizuka, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 835,206, Sep. 21, 1977, abandoned. This application Sep. 12, 1979, Ser. No. 75,134
Claims priority, application Japan, Sep. 21, 1976, 51-113876; Sep. 24, 1976, 51-115212
Int. Cl.³ G06F *1/00, 3/14*
U.S. Cl. 364—707 **10 Claims**



1. An electronic calculator comprising:

power source means for providing a source of energy;

key input means having a plurality of keys disposed thereon for introducing information into said electronic calculator;

computing circuit means energized by said energy from said power source means and responsive to actuation of said keys on said key input means for receiving said information from said key input means and for processing said information, said computing circuit means being normally disconnected from said power source means when said electronic calculator is not in use; and

switching means connected in electrical series between said power source means and said computing circuit means and responsive to actuation of said keys on said key input means for connecting said power source means to said computing circuit means in response to actuation of one of said keys on said key input means and for disconnecting said power source means from said computing circuit means when a predetermined period of time has elapsed since the most recent actuation of one of said keys on said key input means,

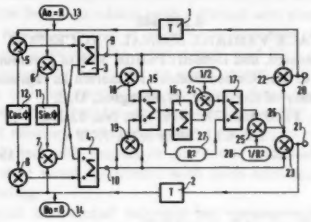
said switching means being continually energized at all times by said energy from said power source means including the periods of time when said power source means has been disconnected from said computing circuit means.

4,285,044

DIGITAL GENERATOR FOR PRODUCING A SINEWAVE

Luc Thomas, Paris, and Claude Cardot, Gif-sur-Yvette, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 11, 1979, Ser. No. 56,668
Claims priority, application France, Jul. 13, 1978, 78 21006
Int. Cl.[3] G06F *1/02*
U.S. Cl. 364—721 9 Claims



1. A digital generator for producing a sinewave in the form of a succession of digitally encoded samples produced with a sampling period T, the sinewave having an amplitude R and a phase difference ϕ between two successive samples, the sinewave at time k defined by the vector sum $A_k+jB_k=Re^{jk\phi}$ the generator comprising:

means for generating signals a=cos ϕ, b=sin ϕ, A_k, B_k at time k, where A_o=R and B_o=0 at time 0;

first signal processing means (**5, 7, 3, 6, 8, 4**) for combining said signals a, b, A_k and B_k for providing signals aA_k-bB_k, and bA_{k+aBk}, at time k;

second signal processing means (**18, 19, 15, 16, 27**) responsive to said first signal processing means for providing a signal proportional to

$$\epsilon_{k+1}=\frac{1}{R^2}(aA_k-bB_k)^2+\frac{1}{R^2}(bA_k+aB_k)^2-1$$

at time k; and

third signal processing means (**24, 17, 25, 22, 23**) responsive to said second signal processing means for providing signals

$$A_{k+1}=(aA_k-bB_k)(1-\tfrac{1}{2}\epsilon_{k+1}),\text{ and}$$
$$B_{k+1}=(bA_k+aB_k)(1-\tfrac{1}{2}\epsilon_{k+1}),\text{ at time } k.$$

4,285,045

DELAY CIRCUIT

Michitoshi Tamori, Tokyo; Sotokichi Shintani, Mitaka; Hideo Kobayashi, Kawasaki, and Hidetaka Yanagidaira, Omiya, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1979, Ser. No. 88,824
Claims priority, application Japan, Oct. 26, 1978, 53-131052
Int. Cl.[3] H03H *7/30*
U.S. Cl. 364—724 1 Claim

1. A delay circuit having the characteristics that the delay time is proportional to the frequency comprising:

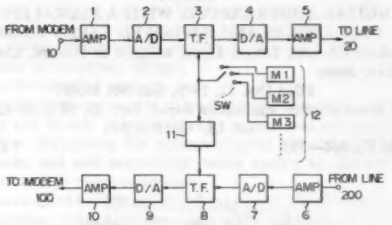
(a) a first analog-digital converter connected to an input terminal of the delay circuit for receiving analog signal to be transmitted by the delay circuit,

(b) a first transversal filter connected to the output of said first analog-digital converter, said transversal filter having a plurality of delay elements connected in series with one another, the delay time (T) of each delay element being the same as the sampling interval of said first analog-digital converter, a plurality of potentiometers each having one end thereof connected to the junction points between said delay elements and the output of the last delay element, and an adder connected to the tap output of each of said potentiometers, wherein said tap outputs provide a tap weight to the output of each of said delay elements and wherein said adder sums the outputs of said potentiometers to provide an output of the transversal filter,

(c) a first digital-analog convertor connected to the output of said transversal filter so as to provide an analog output signal to be transmitted,

(d) a second analog-digital convertor connected to an input terminal of the delay circuit for receiving said transmitted analog signal,

(e) a second transversal filter connected to the output of said second analog-digital converter, said transversal filter having a plurality of delay elements connected in series with one another, the delay time (T) of each delay element being the same as the sampling interval of said second analog-digital converter, a plurality of potentiometers each having one end thereof connected to the junction points between said delay elements and the output of the



last delay element, and an adder connected to the tap output of each of said potentiometers, wherein said tap outputs provide a tap weight to the output of each of said delay elements and wherein said adder sums the outputs of said potentiometers to provide an output of the transversal filter,

(f) a second digital-analog converter connected to the ouput of said second transversal filter so as to provide an analog output signal of the received signal,

(g) a digital memory storing the precalculated value for each of the desired delay characteristics and providing the tap weights of said potentiometers of said first transversal fitler, (h) means for providing the content of said digital memory selectively to the potentiometers of said first transversal filter according to the desired delay characteristics, and

(i) means for providing the inversed value of the content of said digital memory selectively to the potentiometers of said second transversal filter according to the desired delay characteristics.

4,285,046

CORRELATION METHOD

Robert M. Henry, Sowerby Bridge, England, assignor to National Research Development Corporation, London, England

Filed Jun. 7, 1979, Ser. No. 46,322
Claims priority, application United Kingdom, Jun. 16, 1978, 27145/78
Int. Cl.[3] G06F *15/336, 15/20*
U.S. Cl. 364—728 10 Claims

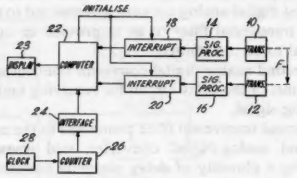
7. Apparatus for determining the transit time of a flowing fluid comprising:

two flow sensors spaced in the direction of flow and each providing an output signal related to fluctuations in a property of the flowing fluid;

threshold sensing means to convert each output signal to a binary signal; and

calculating means for indicating the respective times at which each binary signal changes its state, for applying a

series of time shifts to the times of change of state of one binary signal, and for adding equal increments of time between two consecutive changes of state of the one



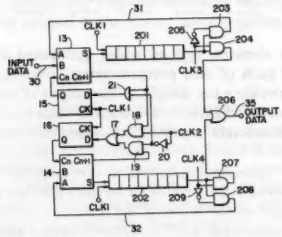
binary signal and the time shifted binary signal when the two signals are in the same state and for subtracting increments when the signals are in different states and to indicate which time shift corresponds to a maximum sum.

4,285,047

DIGITAL ADDER CIRCUIT WITH A PLURALITY OF 1-BIT ADDERS AND IMPROVED CARRY MEANS

Makoto Ohnishi, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,457
Claims priority, application Japan, Oct. 25, 1978, 53-130565
Int. Cl.³ G06F 7/50
U.S. Cl. 364—785 **7 Claims**



5. A digital adder comprising:

first and second 1-bit adders, each of which includes data input terminals, an addition output terminal, a carry input terminal and a carry output terminal;

a first carry circuit interposed between the carry output and the carry input terminals of said first adder, for storing therein a first carry signal from said carry output terminal of said first adder periodically in response to a first clock signal and for applying said stored first carry signal to said carry input terminal of said first adder;

second carry circuit interposed between the carry output and the carry input terminals of said second adder, for storing therein a second carry signal from said carry output terminal of said second adder periodically in response to said first clock signal and for applying said stored second carry signal to said carry input terminal of said second adder;

a first gate circuit connected to said first and second adders and said first and second carry circuits for permitting said first and second carry signals to be stored in said first and second carry circuits, respectively, when a second clock signal is in a first state, and for inhibiting said first and second carry signals from being stored in said first and second carry circuits, respectively and periodically when said second clock signal is in a second state, and for allowing said first carry signal to be stored in said second carry circuit periodically when said second clock signal is in said second state;

first and second shift registers respectively connected to the addition output terminals of said first and second adders for shifting addition outputs of said first and second adders, respectively and periodically in response to said first clock signal; and

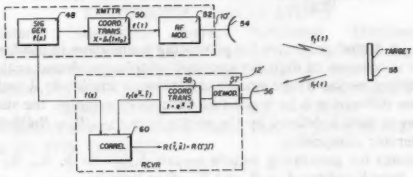
means connected to said first and second shift registers for periodically combining data stored in said first and second shift registers in such a manner that said data stored in said second shift register is attached onto a more significant bit side of said data stored in said first shift register.

4,285,048

SPACE VARIANT SIGNAL PROCESSOR

David P. Casasent, and Demetri Psaltis, both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 27, 1979, Ser. No. 52,386
Int. Cl.³ G06G 9/00, 7/19
U.S. Cl. 364—822 **19 Claims**



11. A signal processing system of a correlation type including electrical signal transmitting and receiving means wherein the improvement comprises:

signal generator means in said transmitter means providing a reference signal;

first coordinate transformation means in said transmitter means coupled to said signal generator means and being responsive to said reference signal to generate a signal therefrom having a predetermined non-linear coordinate transformation of the reference signal;

carrier signal generating means in said transmitter means coupled to said first coordinate transformation means and being responsive to said signal having said predetermined non-linear coordinate transformation to generate a carrier signal which is modulated thereby and which is subsequently transmitted to an external location;

means for receiving and demodulating a reflected return signal from said external location;

second coordinate transformation means in said receiver means and being responsive to the received signal from said external location, said received signal corresponding to the transmitted signal having said non-linear coordinate transformation and being operable to generate a signal having an inverse coordinate transformation relative to said non-linear coordinate transformation;

signal correlation means coupled to said reference signal and said signal having said inverse coordinate transformation for providing a correlation peak indicative of a predetermined data parameter; and

means coupled to said signal correlation means for generating a representation of said predetermined data parameter.

4,285,049

APPARATUS AND METHOD FOR SELECTING FINITE SUCCESS STATES BY INDEXING

Richard M. Bird, Woodland Hills, and Ju C. Tu, Canoga Park, both of Calif., assignors to Operating Systems, Inc., Woodland Hills, Calif.

Filed Oct. 11, 1978, Ser. No. 950,326
Int. Cl.³ G06F 7/04
U.S. Cl. 364—900 **2 Claims**

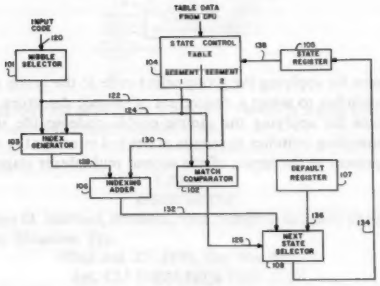
1. A finite state automaton (FSA) responsive to a stream of

input code elements, each code element consisting of a predetermined plurality of code bits, for searching the stream simultaneously for a plurality of specified query patterns each of which comprises an ordered plurality of code element query values; the FSA making transition in response to each input code element from one to another of a plurality of alternative states which include at least one multiple exit decision state in which the FSA searches simultaneously for a plurality of specified alternative code element query values that are code element values of respective query patterns; each code element query value being associated with a distinct next state to which the FSA makes transition in response to detection of that code element query value in the input stream; said FSA comprising

input means for receiving an input stream of digital code data and for successively accessing from the stream a current one of said code elements for parallel delivery,

control memory means including a plurality of state words associated with respective alternative states of the FSA, the state word associated with each said decision state including

a series of ordered indexing bits corresponding to the respective possible values of said input code elements, with set bits designating said plurality of specified code element query values,



and a code representation of a base state number having a predetermined relation to the next success state associated with a selected one of those query values,

state register means for storing an identification of the current state and for accessing the contents of the state word associated with that state,

action means controlled successively by the currently accessed input code element and by the currently accessed contents of the state word and including, when under control of the state word contents associated with said multiple exit decision state,

means for simultaneously comparing said accessed input code element value and the set indexing bits in said accessed state word contents and for developing a match signal in response to detection of a match,

means for deriving an index that represents the position among the set indexing bits of the bit corresponding to the input code element value,

means for developing from said index and from the base state number represented in said accessed state word contents an identification of the next success state associated with the current input code element value,

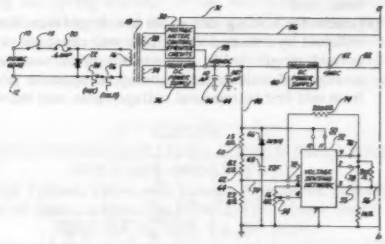
and means responsive to said match signal for storing the so developed next success state identification in said state register means as an identification of the next current state of the FSA.

4,285,050

ELECTRONIC POSTAGE METER OPERATING VOLTAGE VARIATION SENSING SYSTEM

Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,434
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **5 Claims**



1. A postage meter system, comprising:

a source of operating voltage;

means for printing postage;

accounting means coupled to said source of operating voltage and to said postage printing means, said accounting means accounting for postage printed by said printing means, and said accounting means having an operative state and an inoperative state;

means coupled for sensing the voltage level of said source of operating voltage and providing signal information representative of the voltage level of said source of operating voltage, said signal information indicating whether said source voltage is above or below a voltage level required for proper operation of said postage meter system;

means connecting said sensing means to said accounting means for applying said signal information representative of the voltage level of said source of operating voltage to said accounting means;

accounting control means coupled to said voltage level signal applying means and said accounting means, said accounting control means having a first condition for maintaining said accounting means in said operative state and a second condition for maintaining said accounting means in said inoperative state, said accounting control means being switchable between said first and said second condition; and

said accounting control means being switchable from said second condition to said first condition only when said signal information is representative of an operating voltage above said level for proper operation and said accounting control means being switchable from said first to said second condition, independent of said signal information representative of the voltage level of said source of operating voltage.

4,285,051

LOW GLITCH CURRENT SWITCH

Paul R. Henneuse, San Jose, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Feb. 29, 1980, Ser. No. 125,912
Int. Cl.³ G11C *27/02*
U.S. Cl. 365—45 **20 Claims**

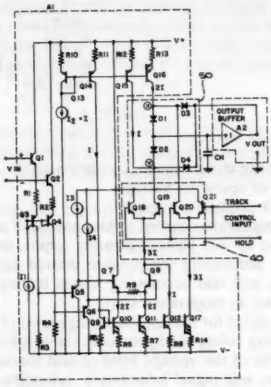
1. An improved analog signal storage circuit of the type having capacitor means for storing an analog voltage signal connected to the input of said circuit, input means for developing a charging current for said capacitor means from said analog voltage, and output means for buffering the voltage across said capacitor means to the output of said circuit, wherein said improvement prevents said voltage across said capacitor means from changing as said circuit switches be-

tween the tracking and the holding of said analog signal and comprises:

(a) circuit means, connected to said capacitor means, for establishing first and second voltage reference nodes in said circuit, said establishing means including

(i) means for holding said nodes at voltages incrementally different by a first value from said capacitor voltage as said circuit tracks said analog signal, said first incremental voltage value being of opposite polarity at each node, and

(ii) means for holding said nodes at voltages incrementally different by a second value from said capacitor voltage as said circuit holds said analog signal, said second incremental voltage value being of opposite polarity from said first incremental voltage value, said incremental voltages being disposed so as to allow said charging current to flow through said capacitor as said circuit tracks said analog voltage and to prevent said flow as said circuit holds said analog voltage; and



(b) current switch means, connected to both of said reference nodes, for directing currents through said circuit means, as said circuit changes between said tracking and said holding of said analog voltage signal, in a manner causing said voltage at said nodes to switch between said first and second incremental voltage values, said switching producing equal and opposite voltage magnitude changes at each of said nodes, thereby preventing any net change in said voltage across said capacitor means and preventing unwanted voltage changes at said output of said circuit.

4,285,052

ROLL-ALONG SWITCH

John T. Bobbitt, Houston, Tex., assignor to Litton Resources Systems, Inc., Houston, Tex.

Filed Jul. 26, 1979, Ser. No. 60,710
Int. Cl.³ G01V *1/22*
U.S. Cl. 367—79 **8 Claims**

8. A roll-along switch for sequentially connecting desired successive sets of seismic detectors, selected from a plurality of such detectors, to a multichannel data acquisition system, comprising:

a first multiplexing stage having a plurality of inputs coupled to the plurality of detectors and having a lesser plurality of outputs;

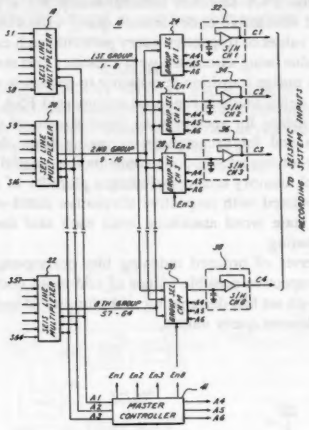
a second multiplexing stage having a plurality of inputs coupled to the outputs of said first multiplexing stage and having a number of outputs equal to the number of channels in the multichannel data acquisition system;

means for advancing the first multiplexing stage at desired intervals;

group select switches associated with the inputs of said second multiplexer stage and signal-sampling switches associated with the outputs of the second multiplexer stage;

means for forming a seis-line address code;

means, associated with said second multiplexer stage, for decoding the seis-line address code into a group-select code and a sample-enable code;



means for applying the group select code to the group select switches to select a desired set of seismic detectors; and

means for applying the sample-enable code to the signal-sampling switches to sample at desired intervals the signal present at the inputs of the second multiplexer stage.

4,285,053

ACOUSTIC METHOD AND APPARATUS FOR MEASURING MICRON AND SUBMICRON DISTANCES

George J. Kren, Los Altos, and Franklin R. Koenig, Palo Alto, both of Calif., assignors to Tencor Instruments, Mountain View, Calif.

Filed May 21, 1979, Ser. No. 40,930
Int. Cl.³ G01S *15/32*
U.S. Cl. 367—99 **8 Claims**

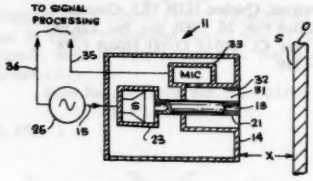
1. A gauge for measuring a change in the relative distance of a surface from an acoustic emission orifice of the gauge comprising,

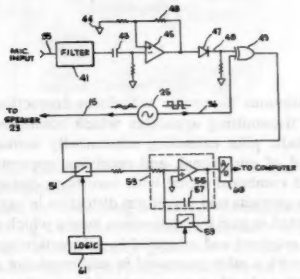
an electrical oscillator producing an audio frequency electrical signal and driving an acoustic wave source producing waves having a wavelength which is very long compared to the distance between a first orifice emitting acoustic waves and a surface, changes to which are to be measured,

a gauge head having said first orifice therein open toward said surface for emitting ecoustic waves, and a second orifice therein open toward said surface proximate to the first orifice, said gauge head closely spaced relative to the surface at a distance, changes to which are to be measured, whereby a relatively high acoustic impedance is formed between the gauge head and the surface, said first orifice communicating with the acoustic wave source, the wavelength of said waves being independent of dimensions of said gauge head,

acoustic wave detection means communicting with the second orifice in said gauge head, said detection means producing a detector electrical signal representing detected acoustic waves, and

phase detection means connected to receive said oscillator audio frequency electrical signal and detector electrical





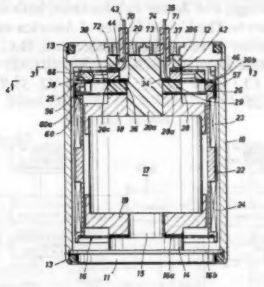
signals, for producing a distance variation signal from the phase difference therebetween.

4,285,054

GEOPHONE

William O. McNeel, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Jul. 27, 1979, Ser. No. 61,279
Int. Cl.³ G01V *1/16*; F16L *1/34*
U.S. Cl. 367—183 **3 Claims**



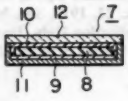
1. A geophone comprising a magnet assembly and an annular coil-mass, spring means supporting the coil-mass for rotation and axial movement relative to the magnet assembly around and along a preselected axis, said spring means including a pair of disc-shaped springs having outer and inner annular portions connected by a plurality of arcuate spring arms, said springs being preformed to position the outer annular portion of each spring in a plane spaced above the plane of the inner annular portion a distance such that the weight of the coil-mass will move the outer annular portion downwardly into substantial alignment with the plane of the inner annular portion to thereby resiliently support the coil-mass, a pair of outside contacts and means electrically connecting the outside contacts to the terminals of the coil of the coil-mass, said connecting means including first and second disc-shaped spring contacts having outer and inner annular portions integrally connected by arcuate spring arms, said inner portions of said spring contacts being in sliding contact with a contact electrically connected to one of the outside terminals and the outer annular portion of each spring contact being electrically connected to one of the leads from the coils, and means for connecting the spring contacts to the coil-mass for movement therewith, said inner and outer portions of the spring contacts being in the same plane when in the unstressed state to keep to a minimum the force exerted by the spring contacts resisting the axial movement of the coil-mass relative to the magnet.

4,285,055

SELF-LUMINESCENT LIGHT SOURCE FOR LIQUID CRYSTAL DISPLAY WATCH

Katsumi Takami, Tokyo, and Takashi Matsuzawa, Musashino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,703
Claims priority, application Japan, Apr. 21, 1978, 53-46544
Int. Cl.³ G04B *19/32*
U.S. Cl. 368—226 **15 Claims**



1. A self-luminescent light source for a liquid crystal display watch comprising a layer of fluorescent substance which has a light reflectivity and which contains in association with at least a part thereof radioactive element promethium (^{147}Pm), a reflective layer which is disposed on one surface of the fluorescent substance layer and which serves to reflect and scatter fluorescence from the fluorescent substance layer, a case which is disposed on the side of the reflective layer remote from the fluorescent substance layer and which serves to perform shielding from bremsstrahlung ascribable to beta rays given out from the promethium, a first cover which is disposed on the side of the fluorescent substance layer remote from the reflective layer and which serves to absorb the beta rays given out from the promethium and to transmit the light from the fluorescent substance layer, and a second cover, made of a material selected from the group consisting of lead-containing glass and lead-containing acrylic resin, which is disposed on the side of said first cover remote from the fluorescent substance layer and which serves to perform shielding from bremsstrahlung ascribable to the beta rays given out from the promethium and to transmit the light from the fluorescent substance layer, whereby said second cover and said case act as a shielding with respect to bremsstrahlung formed in the light source.

4,285,056

REPLICABLE OPTICAL RECORDING MEDIUM

Alan E. Bell, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,547
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—100 **21 Claims**

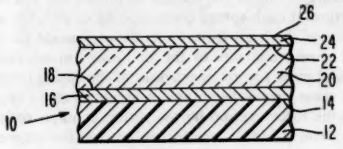
1. A recording medium for use in an optical recording-read-out system employing light of a certain wavelength comprising:

a light reflective layer which reflects light at said wavelength;

a light transmissive layer, overlying said reflective layer, of a material which is substantially transparent at said wave-

length, and has a thickness greater than about 10 nanometers; and

a light absorptive layer overlying said transmissive layer of a material which is absorptive of light at said wavelength;



wherein said transmissive layer is comprised of a material which melts, decomposes or sublimes at a temperature at least 300° C. less than the melting temperature of the material which comprises said absorptive layer.

4,285,057

SAMPLING GATE FOR TDM TELECOMMUNICATION SYSTEM

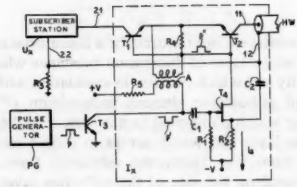
Anes Sbuelz, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Dec. 21, 1979, Ser. No. 105,878

Claims priority, application Italy, Dec. 22, 1978, 31257 A/78

Int. Cl.³ H04J *3/02;* **H03K** *17/00*

U.S. Cl. 370—112 **6 Claims**



1. In a telecommunication system in which a plurality of subscriber lines each having a live wire and a reference wire are provided with individual sampling gates controlled by timing pulses enabling the exchange of message samples, during a time slot allocated to a given subscriber line, between the live wire thereof and a first conductor of a common trunk line having a second conductor connected to the reference wires of said subscriber lines,

the improvement wherein said sampling gate comprises:

a pair of junction transistors of like conductivity type serially inserted in bucking relationship between said first conductor and the live wire of the associated subscriber line, said junction transistors being provided with interconnected bases and emitters forming part of an input circuit thereof coupled to a generator of said timing pulses;

electronic switch means normally connecting said bases to a supply of biasing potential cutting off said junction transistors, said electronic switch means being coupled to said generator for disconnecting said bases from said supply in the presence of timing pulses whereby said junction transistors conduct during an allocated time slot;

first resistance means in series with said electronic switch means;

second resistance means connecting said supply to said second conductor; and

capacitive means establishing a low-impedance path for incoming message samples between said second conductor and said bases via said electronic switch means in the absence of timing pulses.

4,285,058

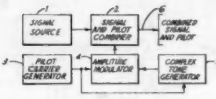
WAVEFORM CORRECTION BY SAMPLING

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, Canada, and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Montreal, Quebec H3R 1K3, Canada

Filed Feb. 26, 1980, Ser. No. 124,803

Int. Cl.³ H04J *15/00;* **H04B** *1/76*

U.S. Cl. 370—119 **2 Claims**



1. A continuous automatic waveform correction system, comprising transmitting apparatus which combines a signal with a periodic pilot extending substantially across the frequency band of said signal, and receiving apparatus which requires said combined signal with waveform distortion, and substantially corrects said waveform distortion in variable gain means, adjusted in gain by comparison means which compares said pilot as received and separated by subtraction means from said signal, with a pilot generated in said receiving apparatus from the carrier of said pilot transmitted from said transmitting apparatus, and pilot elimination means which substantially eliminates said pilot from said signal after said waveform distortion correction in said signal after said waveform distortion correction in said variable gain means, and delivers said signal substantially free from said waveform distortion and from said pilot to an external circuit.

4,285,059

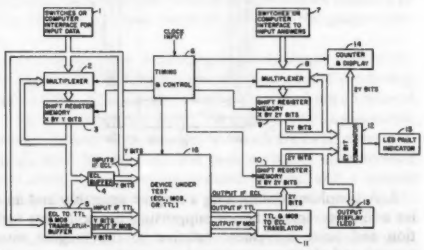
CIRCUIT FOR TEST OF ULTRA HIGH SPEED DIGITAL ARITHMETIC UNITS

Donald W. Burlage, and James F. Lancaster, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 101,927

Int. Cl.³ G06F *11/22;* **G01R** *15/12, 31/00*

U.S. Cl. 371—25 **2 Claims**


SWITCHES OR COMPUTER INTERFACE FOR INPUT DATA
CLOCK INPUT
SWITCHES OR COMPUTER INTERFACE TO INPUT ANSWERS
COUNTER & DISPLAY
MULTIPLEXER
TIMING & CONTROL
MULTIPLEXER
SHIFT REGISTER MEMORY X BY Y BITS
SHIFT REGISTER MEMORY X BY BY BITS
BY BITS
LED FAULT INDICATOR
INPUTS IF ECL
ECL LOCKUP BITS
DEVICE UNDER TEST (ECL, MOS, OR TTL)
SHIFT REGISTER MEMORY X BY BY BITS
OUTPUT IF ECL
OUTPUT IF TTL
OUTPUT IF MOS
ECL TO TTL & MOS TRANSLATOR BUFFER
INPUT IF TTL
T BITS
INPUT IF MOS
TTL & MOS TO ECL TRANSLATOR
OUTPUT DISPLAY (LED)

1. A method for testing ultra high speed digital equipment comprising the steps of selecting an input signal to be fed through the digital equipment; storing this input signal in a first shift register; selecting an expected output signal which should be presented if the input signal was fed through said digital equipment; storing this expected output signal in a second shift register; feeding the input signal from the first shift register into the digital equipment; and comparing the output from the

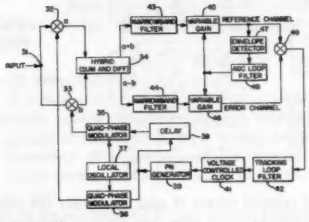
digital equipment with the expected output signal stored in the second shift register to detect faults.

4,285,060

SPREAD SPECTRUM CODE TRACKING LOOP

Raymond F. Cobb, Melbourne Beach, and M. Guy Pelchat, Indialantic, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Feb. 28, 1978, Ser. No. 882,069
Int. Cl.³ H04B *15/10*
U.S. Cl. 375—1 **15 Claims**



1. A code timing recovery system for a spreadspectrum receiver comprising:

first means for combining a received spreadspectrum signal containing a transmitted random sequence of pulses with first and second locally generated random sequences of pulses having a prescribed phase difference therebetween, to thereby produce first and second output signals representative of correlations of the random sequence of pulses contained in said received spread-spectrum signal with said first and second locally generated random sequences of pulses, respectively, and

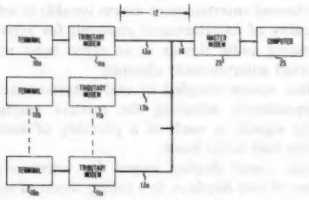
second means, coupled to said first means, for controlling the timing of said first and second locally generated random sequence of pulses in accordance with the difference between the squares of said first and second output signals.

4,285,061

EQUALIZER SAMPLE LOADING IN VOICEBAND DATA SETS

Edmond Y. Ho, Colts Neck Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 14, 1979, Ser. No. 75,647
Int. Cl.³ H04B *3/14*
U.S. Cl. 375—15 **16 Claims**



12. Apparatus for determining the Hilbert transform component values r(t) and r̂(t) of a received complex data signal at a plurality of time points spaced T/p seconds apart, the frequency spectrum of said signal being comprised of at least a first plurality of spectral lines spaced $2\pi/NT$ radians/second apart, said apparatus comprising

first means **(21, 23, 27, 28)** for determining the Hilbert transform component values of said signal at Np initial ones of said time points, and

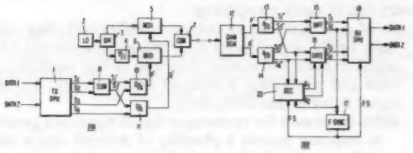
second means **(301, 305, 308, 311)** for determining the Hilbert transform component values of said signal at each remaining one of said plurality of time points as a function of the values thereof at a respective associated one of said initial time points.

4,285,062

DIGITAL MULTI-LEVEL MULTI-PHASE MODULATION COMMUNICATION SYSTEM

Yasuharu Yoshida; Yoshimi Tagashira, and Seijiro Yokoyama, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 79,725
Claims priority, application Japan, Oct. 3, 1978, 53-122235
Int. Cl.³ H04L *3/00, 27/18*
U.S. Cl. 375—20 **8 Claims**



1. A digital multi-level multi-phase modulation communication system having a transmitting section and a receiving section, wherein said transmitting section includes:

first means for performing quarternary differential encoding on the first two trains of N digital signal trains (N is an integer of 4 or more), a frame pulse being included in at least three of said N digital signal trains, to generate a first pair of digital signals; and

second means for generating a modulated wave by performing multi-level multi-phase modulation on a carrier with a first set of digital signals comprising the remaining (n−2) trains of said N digital signal trains and said first pair of digital signals; and wherein said receiving section includes:

third means for performing coherent detection and multi-level decision on said modulated wave to recover said carrier and generate a second set of digital signals and a second pair of digital signals corresponding to said remaining (N−2) trains of said N digital signal trains and said first pair of digital signals respectively;

fourth means for performing quaternary differential decoding on said second pair of digital signals to generate said first two trains of digital signal;

fifth means for generating a frame synchronization output signal and establishing frame synchronism by means of the output signal from said fourth means;

sixth means responsive to the output of said fifth means for extracting frame pulses corresponding to said frame pulses included in said remaining (N−2) trains of said N digital signal trains and in the output signal of said fourth means;

seventh means responsive to the output of said sixth means for generating a control signal representing the phase-locking state of the carrier recovered in said third means; and

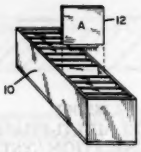
eighth means responsive to said control signal for converting said second set of digital signals into the same trains as said remaining (N−2) trains of said N digital signal trains.

4,285,063

APPARATUS FOR PROVIDING EVENLY DELAYED DIGITAL SIGNALS

Terry B. Zbinden, Maple Grove, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 8, 1979, Ser. No. 47,518
Int. Cl.³ H04N 5/04; H04L 7/00
U.S. Cl. 375—106 **4 Claims**



1. In a digital computer system comprising a plurality of discrete modular assemblies that are located at various electrical distances from each other, a system for ensuring that a digital signal originating in one of said modular assemblies is delayed an equal amount at all modular assemblies receiving such digital signal comprising:

each of said receiving modular assemblies including substantially similar digital signal delay means for receiving a digital signal from an originating other one of said modular assemblies and generating a delayed digital signal, said digital signal delay means comprising:

delay line means for receiving a digital signal and generating in response thereto a plurality of delayed digital signals, each one of said delayed digital signals delayed incrementally increasing delay times and coupled to a corresponding separate one of a like plurality of delay line output lines;

a plurality of select lines; and

selector means responsively coupled to said select lines and to said delay line output lines for coupling to a single selector means output line a selected one of said delayed digital signals;

means for coupling said digital signal from the originating one of said modular assemblies to the delay line means of the receiving ones of said modular assemblies; and,

means coupling digital selection signals to each of the select lines of the receiving ones of said modular assemblies for selecting evenly delayed digital signals at all of said receiving modular assemblies, which evenly delayed digital signals are delayed an equal amount with respect to the digital signal originating at the originating modular assembly.

4,285,064

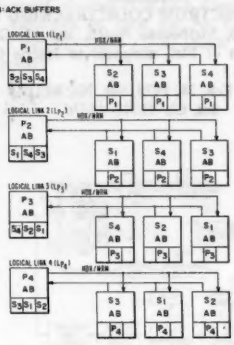
TDMA SATELLITE COMMUNICATION SYSTEM

Gene D. Hodge, Germantown, Md., assignor to IBM Corporation, Armonk, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,927
Int. Cl.³ H04B 7/185
U.S. Cl. 455—13 **6 Claims**

2. A satellite communications controller being one of a plurality of such controllers for operation in a network having a plurality of communication nodes over a satellite link, each node having one such controller, the local controller assuming a primary control status while the remaining remote controllers in said network assume a secondary control status during a first point-to-multipoint broadcast subnetwork operation between said local controller and said remaining remote controllers, said local controller transferring said primary control function from itself to one of said remaining remote controllers establishing point-to-multipoint data and control transmission from said one of said remaining controllers while said local controller assumes a secondary control status, comprising:

a first level control means in said controller for implementing the point to multipoint subnetwork connection between said controller and said remaining controllers in said network;



a second level control means in said controller for passing the primary station status from one node to another over said satellite link;

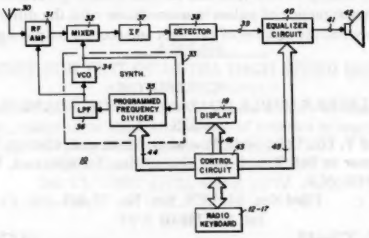
whereby time division multiple access communication between said nodes in said network is achieved.

4,285,065

RADIO WITH AUDIO GRAPHIC EQUALIZER

David J. Priniski, Lake-in-the-Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 21, 1980, Ser. No. 114,018
Int. Cl.³ H04B 1/16; H03G 3/02
U.S. Cl. 455—158 **17 Claims**



1. A multichannel entertainment device with an audio graphic equalizer, comprising:

multichannel entertainment means tunable to select any of a plurality of entertainment channels for providing corresponding audio signals in an audio band related to the selected entertainment channel;

equalizer means coupled to said entertainment means for independently adjusting the relative emphasis of said audio signals in each of a plurality of audio subbands within said audio band;

common visual display means for selectively providing either of two displays, in a tuning mode of said entertainment device said display means displaying an indication of the entertainment channel to which the entertainment means is tuned, and in an equalizer mode of said entertainment device said display means displaying an electronic display indication of the relative emphasis provided by said equalizer means to the audio signals in said plurality of subbands; and

control means coupled to said entertainment means, said equalizer means and said display means for selectively

implementing said equalizer mode wherein said display means displays the relative emphasis of said audio subbands rather than said indication of the tuned entertainment channel, and for selectively implementing said tuning mode wherein said display means displays the indication of the entertainment channel rather than the relative emphasis of said audio subbands.

4,285,066

RECEIVER HAVING A SEARCH TUNING CIRCUIT

Theodorus H. M. Van Deursen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,290

Claims priority, application Netherlands, Jan. 17, 1979, 7900350

Int. Cl.[3] **H03J** *7/22*

U.S. Cl. 455—166 **5 Claims**

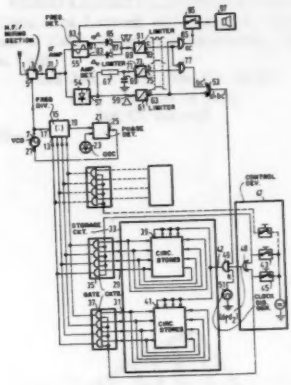
1. A tuning circuit for a receiver comprising:

memory means which includes a plurality of scannable groups of tuning data, each tuning datum representing a frequency of a desired radio transmitter, said memory means further including a separate output for each of said groups;

search means coupled to said memory means for incrementally selecting a tuning datum of said tuning data in each of said scannable groups;

a scannable group selection means coupled to said separate outputs for selecting one of said scannable groups, said receiver then being tuned to said selected tuning datum in said selected scannable group;

means coupled to said search means for stopping the incremental scanning upon the reception of a received signal having sufficient field strength; and

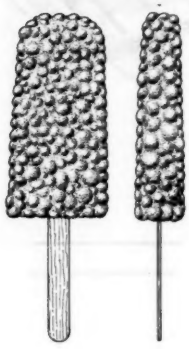


means for automatically restarting said seach means if the frequency of the received signal does not correspond to said tuning datum selected by said search means from the tuning data in said selected scannable group.

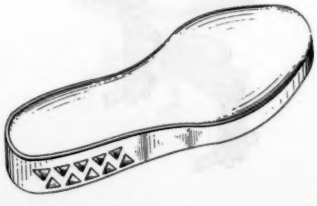
DESIGNS

AUGUST 18, 1981

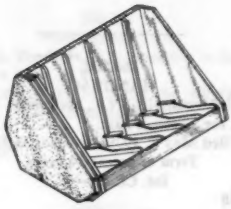
260,195
FROZEN CONFECTION
Thomas R. Kelly, Wellingborough, and Vijay A. Sawant, Stanwick, both of England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.
Filed Feb. 26, 1979, Ser. No. 15,383
Claims priority, application United Kingdom, Aug. 30, 1978, 986145/78
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—22



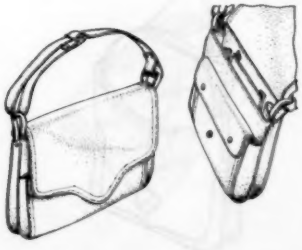
260,196
ELASTOMERIC SHOESOLE
Stanley C. Plagenhoef, Amherst, Mass., assignor to Motion Analysis, Inc., Amherst, Mass.
Filed Jan. 2, 1979, Ser. No. 299
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



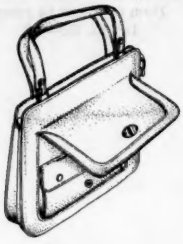
260,197
VIDEO CASSETTE STORAGE TRAY
Jerry M. Long, Ben Lomond, and James A. Womack, Livermore, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.
Filed Jun. 1, 1979, Ser. No. 44,367
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



260,198
HANDBAG
Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed May 4, 1979, Ser. No. 35,925
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48



260,199
HANDBAG
Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed May 4, 1979, Ser. No. 35,922
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48



260,200
HANDBAG
Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed May 4, 1979, Ser. No. 35,924
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48

260,201
HANDBAG
Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed May 4, 1979, Ser. No. 35,923
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—53

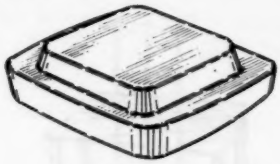
260,202
COMPUTER TERMINAL CASE
Charles F. Middleton, Jr., Sudbury, Mass., assignor to Computer Transceiver Systems, Inc., Paramus, N.J.
Filed Jun. 15, 1979, Ser. No. 48,819
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—72

260,203
COMBINED SEAT AND EASEL
Peter [illegible]. Arnold, New Artist School of Fine Art, 8 Durham St. East, Auckland, New Zealand
Filed Dec. 21, 1978, Ser. No. 971,761
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—17

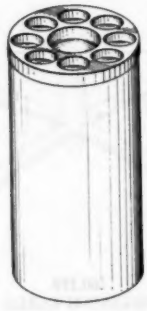
260,204
CHAIR
Richard Sapper, Stuttgart, Fed. Rep. of Germany, assignor to Knoll International, Inc., New York, N.Y.
Filed Mar. 1, 1978, Ser. No. 882,551
Claims priority, application Italy, Sep. 5, 1977, 22105 A/77
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

260,205
ARMCHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1978, Ser. No. 908,143
The portion of the term of this patent subsequent to Oct. 23, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

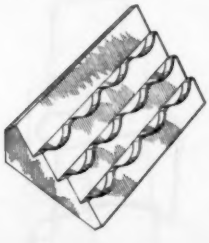
260,206
PLATFORM USED PRIMARILY TO ELEVATE A CHILD'S AUTOMOBILE SEAT
Thomas G. Molnar, McKinnon, Australia, assignor to Repco Limited, Melbourne, Australia
Filed Nov. 29, 1978, Ser. No. 964,639
Claims priority, application Australia, Aug. 14, 1978, 75570
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



260,207
PORTABLE BAR
Adrian A. Whyte, Bardonia, N.Y., assignor to Schenley Industries, Inc., New York, N.Y.
Filed Aug. 31, 1978, Ser. No. 938,584
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



260,208
MULTIPLE MEDALLION DISPLAY RACK
Donald Nutting, 1295 Ithica Dr., Boulder, Colo. 80303
Filed Aug. 6, 1979, Ser. No. 64,192
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—157



260,209

WORKBENCH OR SIMILAR ARTICLE

Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Niles, all of Ill., assignors to Hirsh Company, Skokie, Ill.

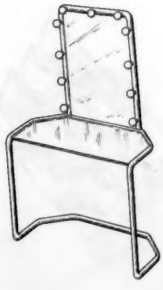
Filed Jan. 29, 1979, Ser. No. 7,485
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

260,210

DRESSING TABLE

Sidney Gibson, 229 Deloraine Ave., Toronto, Ontario, Canada (M5M 2B2)

Filed Apr. 24, 1979, Ser. No. 32,744
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—180

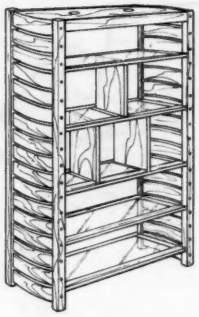


260,211

BOOKCASE

Jobie G. Redmond, High Point, N.C., assignor to Jack Daniel Distillery, Lem Motlow, Prop., Inc., Lynchburg, Tenn.

Filed Nov. 8, 1978, Ser. No. 958,848
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



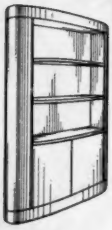
260,212

OPEN SHELF UNIT

Gabriella Crespi, Via Turati, 3, Milano, Italy

Filed Dec. 5, 1978, Ser. No. 966,729
Claims priority, application Italy, Sep. 21, 1978, 22830 A/78
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

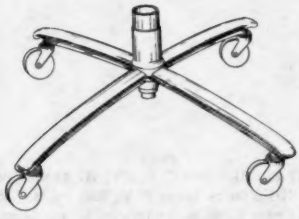
260,213
COMBINED CABINET AND OPEN SHELF UNIT
Gabriella Crespi, Via Turati, 3, Milano, Italy
Filed Dec. 5, 1978, Ser. No. 966,730
Claims priority, application Italy, Sep. 21, 1978, 22830 A/78
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



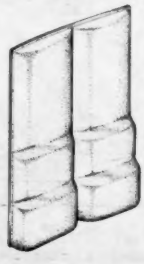
260,214
PEDESTAL
Marlan M. Lewis, Dallas, and Joe D. Carlock, Garland, both of Tex., assignors to Marlan M. Lewis, Inc.
Filed Jun. 23, 1978, Ser. No. 918,662
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

260,215
LEG FOR AN INDUSTRIAL WORK TABLE
James P. O'Neil, Swansea, Mass., assignor to Automation Designs, Inc., Bristol, R.I.
Filed Apr. 9, 1979, Ser. No. 28,494
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194

260,216
CHAIR BASE
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1978, Ser. No. 908,146
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



260,217
STEPPED BACK REST CUSHION
Stanley A. Rhoe, 4770 N. 7th St., Unit 1180, Phoenix, Ariz. 85014
Filed Apr. 20, 1978, Ser. No. 898,406
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



260,218

COMBINED SKIRT AND TROUSER HANGER

Leonard Bisk, 7833 Spring Ave., Elkins Park, Pa. 19117

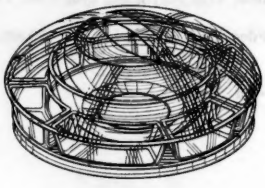
Filed Mar. 16, 1979, Ser. No. 20,900
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—253

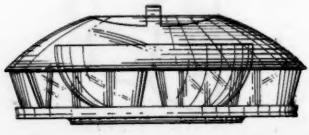
260,219

ROTATABLE FOOD SERVING ASSEMBLY

Joseph W. Blake, South Salem, N.Y.; Richard H. Corbin, Westport, and Peggy P. Neale, Bridgeport, both of Conn., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Jun. 22, 1979, Ser. No. 51,259
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—2



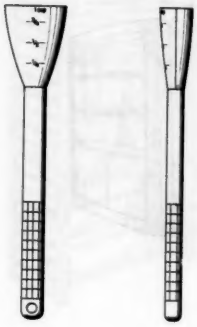


260,220

MEASURING TOOL FOR LAUNDRY DETERGENT OR THE LIKE

Arland R. Caffee, 556 Military Police Co., APO New York, N.Y. 09176

Filed Jun. 18, 1979, Ser. No. 49,202
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D7—50

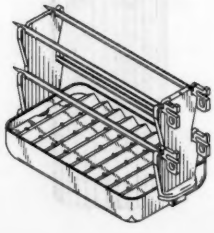


260,221

COMBINED COOKING, ROASTING AND SHISHKEBOB PAN

B. Paul Lee, deceased, late of Aurora, Colo., and by Esther M. Lee, personal representative, 1085 Dawson, Aurora, Colo. 80011

Filed Aug. 30, 1978, Ser. No. 938,319
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—85



260,222

STRAWBERRY HULLER OR THE LIKE

Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Jul. 25, 1979, Ser. No. 60,556

Term of patent 14 years

Int. Cl. D07—*04*

U.S. Cl. D7—105

260,223

PASTRY CUTTER OR THE LIKE

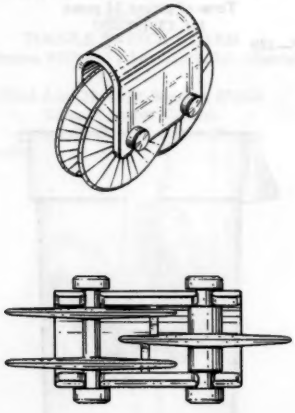
Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 16, 1979, Ser. No. 66,902

Term of patent 14 years

Int. Cl. D07—*04*

U.S. Cl. D7—106



260,224

BARBECUE GRILL

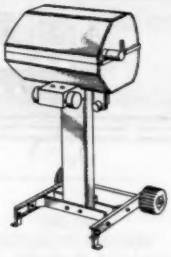
Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 18, 1980, Ser. No. 131,472

Term of patent 14 years

Int. Cl. D7—*02*

U.S. Cl. D7—108



260,225

BARBECUE GRILL

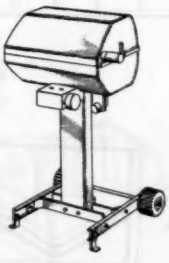
Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 18, 1980, Ser. No. 131,473

Term of patent 14 years

Int. Cl. D7—*02*

U.S. Cl. D7—108



260,226

WALL MOUNTABLE MICROWAVE OVEN

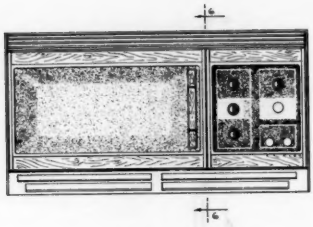
Charles H. Schmitt, and James J. Hoetker, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 18, 1979, Ser. No. 40,344

Term of patent 14 years

Int. Cl. D7—*02*

U.S. Cl. D7—128



260,227

COOKING RACK

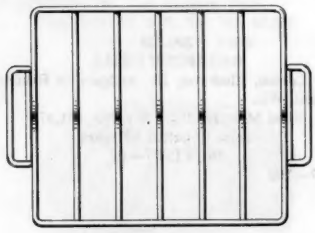
Wade Bentson, San Francisco, Calif., assignor to Amco Corporation, Chicago, Ill.

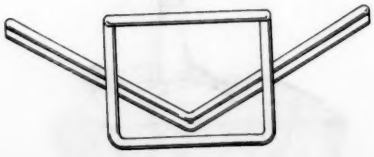
Filed Aug. 8, 1979, Ser. No. 64,846

Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—129





260,228

FORK OR SIMILAR ARTICLE OF FLATWARE

Clark L. Lofgren, Taunton, Mass., assignor to Reed & Barton Corporation, Taunton, Mass.

Filed Aug. 13, 1979, Ser. No. 65,950

Term of patent 14 years

Int. Cl. D07—*03*

U.S. Cl. D7—137

260,229

REFUSE CONTAINER

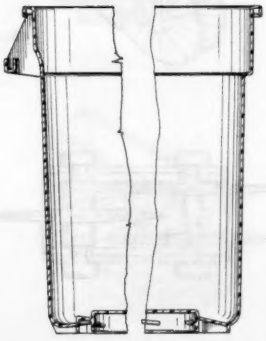
Dale T. Maza, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Mar. 31, 1978, Ser. No. 893,143

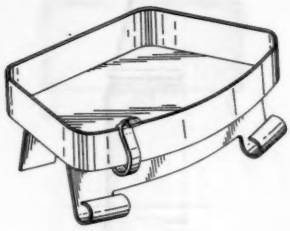
Term of patent 14 years

Int. Cl. D7—*07*

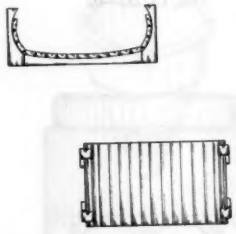
U.S. Cl. D7—189



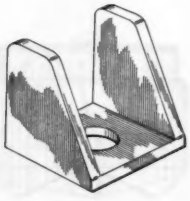
260,230
FIRE GRATE FRET
Robert Hamilton, 5 The Rise, Elstree, Hertfordshire, England
Filed Apr. 19, 1978, Ser. No. 897,920
Claims priority, application United Kingdom, Oct. 19, 1977, 981974
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



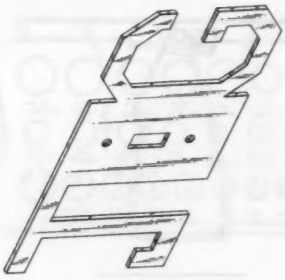
260,231
LOG HOLDER
Frank P. DeMuro, 336 Provincetown Rd., Cherry Hill, N.J. 08034
Filed Aug. 14, 1978, Ser. No. 933,722
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



260,232
TOGGLE SWITCH GUARD
Sanford L. Simons, 9188 S. Turkey Creek Rd., Morrison, Colo. 80465
Filed Aug. 27, 1979, Ser. No. 69,628
Term of patent 14 years
Int. Cl. D8—*09*; D13—*03*
U.S. Cl. D8—350

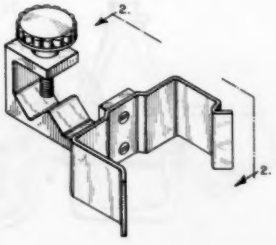


260,233
ELECTRIC SWITCH PLATE
Mark Goldstein, and Judith A. Goldstein, both of 62 Southwoods Rd., Syosset, N.Y. 11791
Filed May 23, 1980, Ser. No. 152,786
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—351



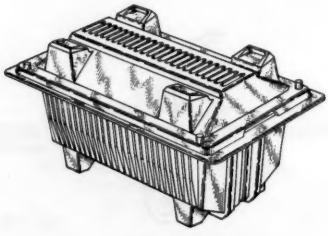
260,234
RELEASABLE HOOK
Curtiss S. Johnson, Jr., Middle Haddam, Conn., assignor to C. Sherman Johnson Co., Inc., East Haddam, Conn.
Filed Aug. 23, 1979, Ser. No. 68,930
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—370

260,235
CLAMP
Lenart Anderson, Mt. Prospect, and Nicholas Zissimopoulos, Schaumburg, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Aug. 9, 1979, Ser. No. 65,385
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—394



260,236
LIQUID DISPENSING BOTTLE
J. Jay Anderson, Racine; Karl J. Bobinger, Union Grove, and Ronald G. Cramer, Racine, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Mar. 17, 1978, Ser. No. 887,408
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—338

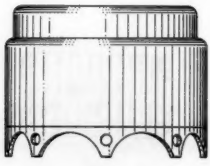
260,237
SEMICONDUCTOR WAFER CONTAINER
Robert J. Fuzere, Sunnyvale, Calif., assignor to Fuzere Manufacturing Co., Inc., Sunnyvale, Calif.
Filed Aug. 7, 1978, Ser. No. 931,823
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—341



260,238
BOTTLE
Allan Costa, 23 Horseshoe Rd., Old Westbury, N.Y. 11568
Filed Mar. 21, 1979, Ser. No. 22,449
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

260,239
BOTTLE
Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 11, 1979, Ser. No. 47,480
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—395

260,240
COSMETIC JAR
John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417
Filed Jul. 13, 1979, Ser. No. 57,294
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D9—399



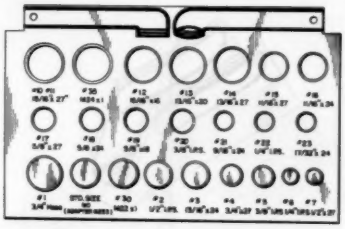
260,241
COSMETIC JAR
John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417
Filed Jul. 13, 1979, Ser. No. 57,296
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D9—399

260,242
COSMETIC JAR
John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417
Filed Jul. 13, 1979, Ser. No. 57,297
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D9—399

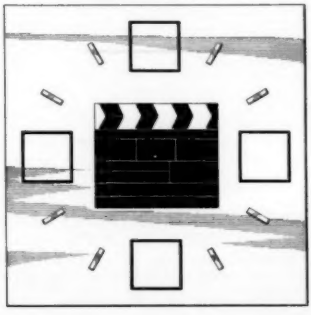
260,243
BEVERAGE CONTAINER
Amilcare Dogliotti, Alba, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Italy
Filed Jan. 17, 1979, Ser. No. 4,116
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—425

260,244
SIMULATIVE ALARM CLOCK HOUSING
James R. Young, 11047 Moorpark, North Hollywood, Calif. 91601
Filed Sep. 21, 1979, Ser. No. 77,740
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—1

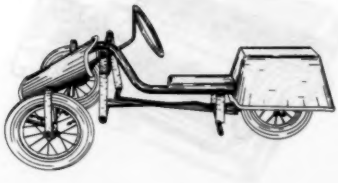
260,245
FAUCET SPOUT GAUGE
Var E. Lordahl, Chicago, Ill., assignor to T.S.G. Mfg. Co., Chicago, Ill.
Filed May 23, 1979, Ser. No. 41,689
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



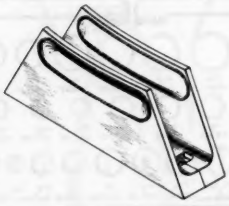
260,246
CLOCK FACE
Marvin A. Stern, 5461 Amestoy Ave., Encino, Calif. 91316
Filed Aug. 17, 1979, Ser. No. 67,429
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125



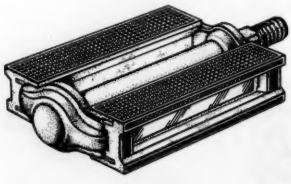
260,247
PEDAL VEHICLE
Stig Patriksson, Sätergarden 15, S-463 00 Lilla Edet, Sweden
Filed Sep. 8, 1978, Ser. No. 940,850
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



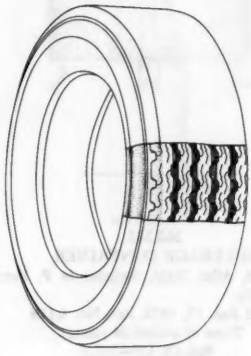
260,248
BICYCLE STORAGE RACK
Dennis J. Gallagher, 6931 Vera Cruz Ct., Citrus Heights, Calif. 95610
Filed May 25, 1979, Ser. No. 42,518
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—115



260,249
BICYCLE PEDAL, OR THE LIKE
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.
Filed Feb. 1, 1978, Ser. No. 874,097
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—125

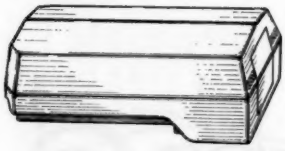


260,250
TIRE
Christian Petitalot, Ennezat, France, assignor to Compagnie Generale des Etablisements Michelin, Clermont-Ferrand, France
Filed Feb. 23, 1979, Ser. No. 14,350
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



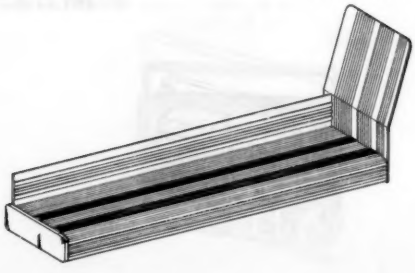
260,251
COMBINED LUGGAGE CARRIER AND BACK REST FOR MOTORCYCLE
Claude Larose, Laval-Quebec, Canada, assignor to Triangle Accessoires de Motocyclettes LTEE, St-Léonard, Canada
Filed Dec. 10, 1979, Ser. No. 102,459
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158

260,252
MODULE CARGO UNIT FOR A PICKUP VEHICLE
Richard L. Groene, 1431 Frazier St., Des Moines, Iowa 50315
Filed Jul. 19, 1979, Ser. No. 58,853
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

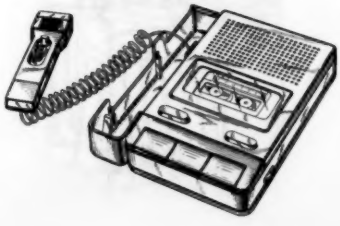


260,254
CANOE PADDLE
Norman S. Heller, Loudonville, Ohio, assignor to Heller Products, Inc., Loudonville, Ohio
Filed Nov. 17, 1978, Ser. No. 961,538
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—215

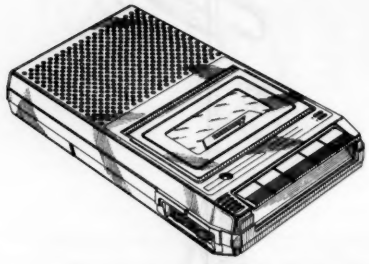
260,253
COMBINED VEHICLE RUNNING BOARD AND SPLASH GUARD
John E. Waters, Jr., 601 Willow Creek Dr., Waco, Tex. 76710
Filed Apr. 2, 1979, Ser. No. 26,203
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



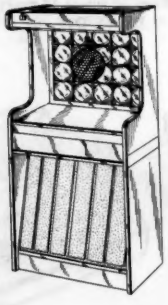
260,255
DICTATING MACHINE
Gerhard Dietrich, Nuremberg, Fed. Rep. of Germany, assignor to Grundig AG, Furth Bay, Fed. Rep. of Germany
Filed Dec. 13, 1978, Ser. No. 969,053
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—3



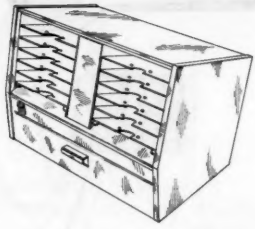
260,256
TAPE RECORDER AND PLAYER OR SIMILAR ARTICLE
Paul J. Klucznik, Manlius, N.Y., assignor to General Electric Company, New York, N.Y.
Filed Apr. 25, 1979, Ser. No. 33,100
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



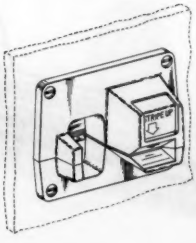
260,257
COMBINED PHONOGRAPH, TAPE PLAYER AND LIGHTING CABINET
George P. Roegner, Jersey City, N.J.; Richard Hawley, Santa Claus, Ind.; Howard Steen, Santa Claus, Ind., and Sig Biener, Santa Claus, Ind., assignors to Soundesign Corporation, Jersey City, N.J.
Filed May 17, 1979, Ser. No. 39,803
Term of patent 14 years
Int. Cl. D14—*01;* D26—*05*
U.S. Cl. D14—17



260,258
POWERED COLLATOR
Elsio J. Loos, Elmhurst, N.Y.; Raymond H. Van Wagener, Darien, Conn.; Paul B. Sweeney, Jr., Syracuse, and Arthur J. Pulos, Fayetteville, both of N.Y., assignors to Swingline, Inc., Long Island City, N.Y.
Filed May 10, 1978, Ser. No. 904,633
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—110



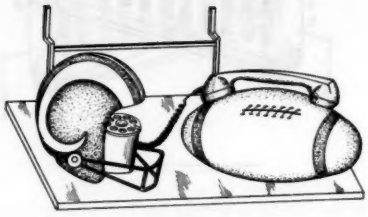
260,259
MAGNETIC CARD READER
Daniel J. Crowley, Harrisburg, and Raymond V. Pass, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 31, 1978, Ser. No. 956,524
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107



260,260
NOVELTY TELEPHONE

Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004

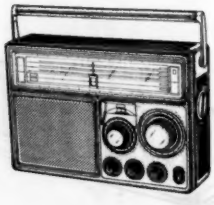
Filed Jan. 29, 1979, Ser. No. 7,331
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



260,261
RADIO RECEIVER

Takao Okada; Takeyoshi Kawano, both of Kyoto; Shinza Murakami, Higashi-Osaka, and Kikuo Ohta, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 15, 1978, Ser. No. 942,906
Claims priority, application Japan, Apr. 4, 1978 53-13245
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



260,262
PROJECTION TELEVISION CABINET

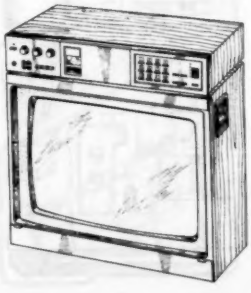
Eugene B. Sergio, Jr., 5391 Westerville Rd., Columbus, Ohio 43229

Filed Nov. 27, 1978, Ser. No. 963,971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79

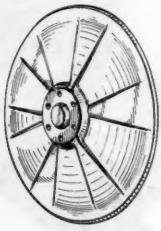
260,263
TELEVISION RECEIVER OR SIMILAR ARTICLE

Shunichi Shoji, and Hideaki Suzuki, both of Kawasaki, Japan, assignors to The General Corporation, Japan

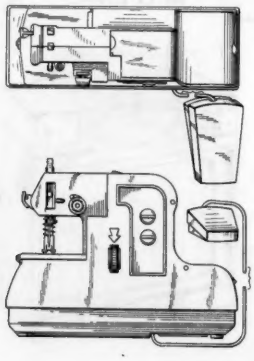
Filed Aug. 24, 1979, Ser. No. 69,370
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D14—80



260,264
COULTER
Erik H. Carlsson, Överum, and Rolf E. Lindqvist, Linköping, both of Sweden, assignors to Aktiebolaget Overums Bruk, Överum, Sweden
Filed Jul. 17, 1978, Ser. No. 924,986
Claims priority, application Sweden, Jan. 31, 1978, 78-254
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—29

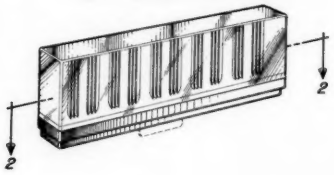


260,265
MINIATURE SEWING MACHINE
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Feb. 14, 1979, Ser. No. 12,228
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69

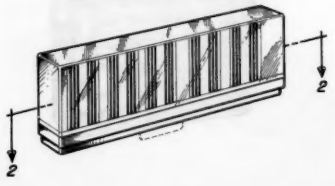


260,266
PHOTOFLASH LAMP UNIT
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 25, 1978, Ser. No. 936,699
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

260,267
PHOTOFLASH LAMP UNIT
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 25, 1978, Ser. No. 936,700
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

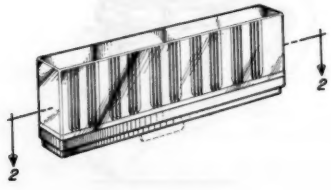


260,268
PHOTOFLASH LAMP UNIT
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 25, 1978, Ser. No. 936,860
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



260,269
PHOTOFLASH LAMP UNIT
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 25, 1978, Ser. No. 936,877
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

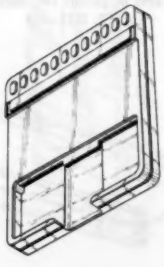
260,270
PHOTOFLASH LAMP UNIT
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 25, 1978, Ser. No. 936,878
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



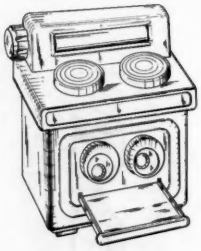
260,271
GUITAR BRIDGE PIN
Frank S. Smirne, 1240 Washington St., Whitehall, Pa. 18052
Filed Mar. 21, 1978, Ser. No. 888,544
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

260,272
MARKING INSTRUMENT
Günter Horntrich, Pforzheim, Fed. Rep. of Germany, assignor to Messrs. Kreuzer-Werk GmbH, Bonn-Duisdorf, Fed. Rep. of Germany
Filed Jun. 1, 1979, Ser. No. 44,416
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, MR1838
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43

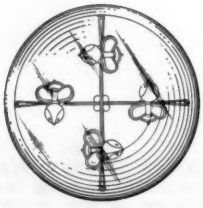
260,273
WALL MOUNTABLE TELEPHONE REGISTER
Hans Halm, Herne, Fed. Rep. of Germany, assignor to Arlac-Werk Heiko Ippen, Hamburg, Fed. Rep. of Germany
Filed May 2, 1979, Ser. No. 35,231
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



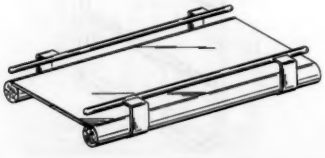
260,274
TOY OVEN
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039; Paul B. Means, III, Basking Ridge; James J. Wilcox, Summit, both of N.J., and David W. Reina, Huntington, N.Y., assignors to Mel Appel, Livingston, N.J.
Filed Apr. 11, 1979, Ser. No. 29,113
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



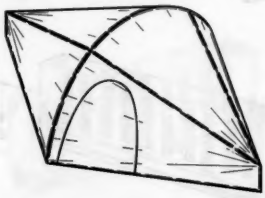
260,275
ACTION BALL TOY
Manfred Strauss, Randolph, N.J., assignor to Shelcore, Inc., New York, N.Y.
Filed Apr. 30, 1979, Ser. No. 34,556
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



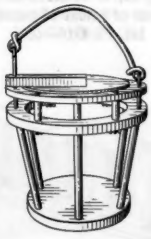
260,276
SLIDE WITH SIDE RAILS
Roger D. Gehlbach, White Rock, and Zoltan Kitka, Surrey, both of Canada, assignors to Interplay Design Limited, Surrey, Canada
Filed Sep. 24, 1979, Ser. No. 78,614
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



260,277
TENT
Gilbert A. Davis, 1325 15th St., Sacramento, Calif. 95814
Continuation-in-part of Ser. No. 794,640, May 6, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 15,907
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253



260,278
MINNOW BUCKET HOLDER
Harold R. Bradford, 805 Range St., Blue Springs, Mo. 64015
Filed Feb. 8, 1980, Ser. No. 119,672
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

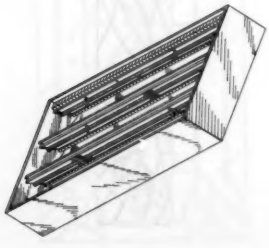


260,279
CHILDREN'S PLAY SPRINKLER OR THE LIKE
Douglas A. Geller, Monrovia, and David C. McElroy, South Pasadena, both of Calif., assignors to Wham-O Mfg. Co., San Gabriel, Calif.
Filed Aug. 27, 1979, Ser. No. 70,339
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—09

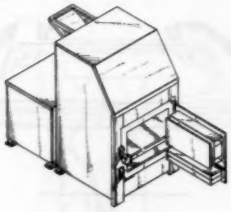
260,280
CHECK VALVE CASING
John F. Campbell, Guelph, Canada, assignor to GSW Limited/-Limitee, Toronto, Canada
Filed Jun. 5, 1978, Ser. No. 912,561
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—22

260,281
INFANT BATH PAD
Judith A. Rist, Phoenix, Ariz., assignor to Judi's Orijinals, Phoenix, Ariz.
Filed Oct. 25, 1978, Ser. No. 954,417
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—52

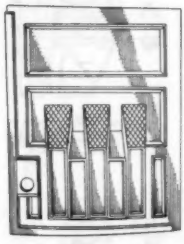
260,282
CONCENTRATING SOLAR RADIATION COLLECTOR ASSEMBLY
Arthur P. Fattor, 5380 S. Holly, Englewood, Colo. 80111
Filed Mar. 17, 1978, Ser. No. 887,636
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72



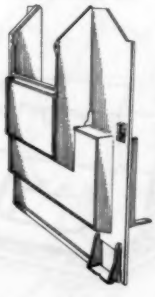
260,283
SOLID FUEL FURNACE
Bunyan B. Cagle, 5711 Grand Ave., Fort Smith, Ark. 72901
Filed Mar. 8, 1979, Ser. No. 18,659
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



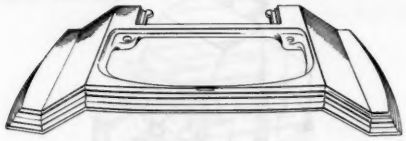
260,284
SIDE PANEL FOR WOOD BURNING STOVE
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.
Filed Oct. 19, 1979, Ser. No. 86,514
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



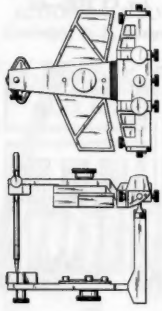
260,285
BACK PANEL FOR WOOD BURNING STOVE
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.
Filed Oct. 19, 1979, Ser. No. 86,515
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



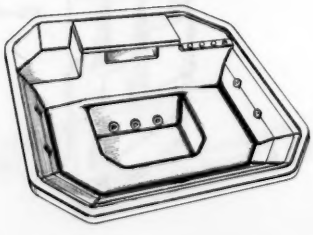
260,286
TOP FOR A WOOD BURNING STOVE
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.
Filed Oct. 19, 1979, Ser. No. 86,516
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



260,287
DENTAL ARTICULATOR
Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324
Filed Nov. 30, 1978, Ser. No. 964,978
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



260,288
HYDROTHERAPY SPA
Ralph D'Innocente, Pleasant Hill, and Richard L. Janosko, Oakland, both of Calif., assignors to Jacuzzi Whirlpool Bath, Inc., Walnut Creek, Calif.
Filed Jan. 22, 1979, Ser. No. 5,403
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—38



260,289
BABY BOTTLE HOLDER
David Rubin, 900 Whitmore, Detroit, Mich. 48203
Filed Oct. 12, 1978, Ser. No. 950,606
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—48

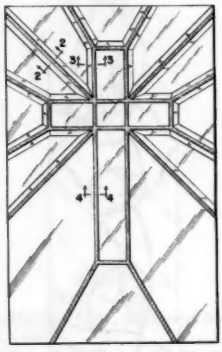
260,290
DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A WINDOW
B. Jeremiah Shaffer, Worthington, and Larry Rasmussen, Mt. Gilead, both of Ohio, assignors to Pease Company, Fairfield, Ohio
Filed Oct. 22, 1979, Ser. No. 86,884
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

260,291

DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed Oct. 22, 1979, Ser. No. 86,885
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

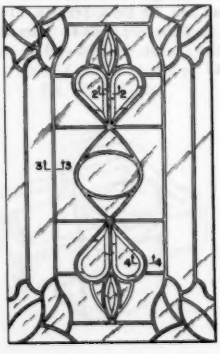


260,292

DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

B. Jeremiah Shaffer, Worthington, and Larry Rasmussen, Mt. Gilead, both of Ohio, assignors to Pease Company, Fairfield, Ohio

Filed Oct. 22, 1979, Ser. No. 86,893
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



260,293

DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A WINDOW

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

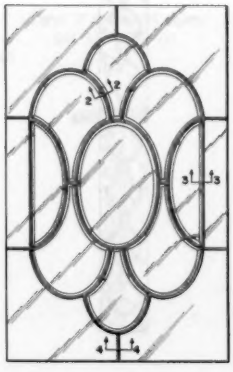
Filed Oct. 24, 1979, Ser. No. 87,920
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

260,294

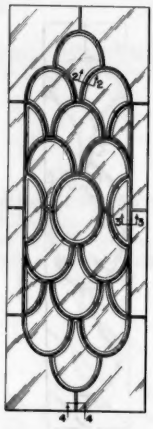
DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed Oct. 24, 1979, Ser. No. 88,202
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



260,295
DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW
B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio
Filed Oct. 24, 1979, Ser. No. 88,209
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



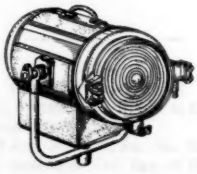
260,296
DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A WINDOW
B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio
Filed Oct. 24, 1979, Ser. No. 88,210
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

260,297
DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW
B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio
Filed Apr. 28, 1980, Ser. No. 144,801
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

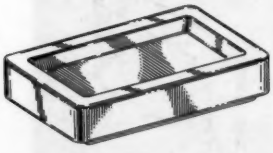
260,298
SPOTLIGHT
Giacinto C. D'Ercoli, Rolling Meadows, Ill., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Jun. 19, 1978, Ser. No. 916,800
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—63

260,299
SPOTLIGHT
Giacinto C. D'Ercoli, Rolling Meadows, Ill., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Jun. 19, 1978, Ser. No. 916,801
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—63

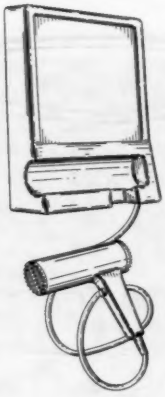
260,300
SPOT LAMP
Daniel L. Aron, Northridge, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.
Filed Nov. 20, 1978, Ser. No. 962,292
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—63



260,301
BAR OF SOAP
Russell A. O'Connor, 462 Penhale Ave., Campbell, Ohio 44405
Filed Jan. 8, 1979, Ser. No. 1,464
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—8.1

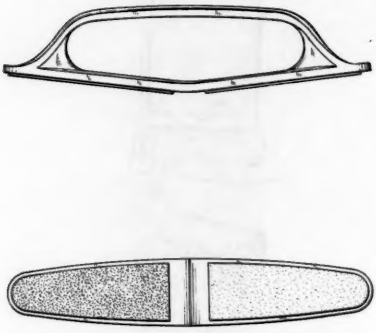


260,302
COMBINED HAIR DRYER AND CABINET
Raymond P. Lacey, 6 Auburn St., Broadstone, Dublin 7, Ireland
Filed Oct. 29, 1979, Ser. No. 88,878
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—15

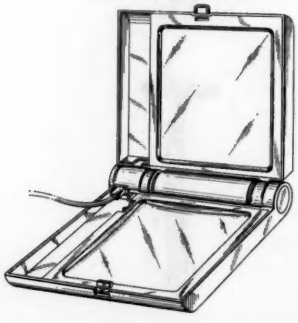


260,303
RAZOR
Jurgen E. Wordtmann, Solingen, Fed. Rep. of Germany, assignor to Wilkinson Sword Limited, Fed. Rep. of Germany
Filed Oct. 15, 1979, Ser. No. 84,891
Claims priority, application United Kingdom, Apr. 24, 1979, 989662/79
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46

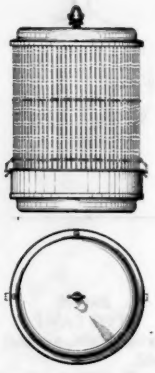
260,304
PEDICURE TOOL
William F. Rosenberg, Westport, Conn., assignor to Revlon, Inc., New York, N.Y.
Filed Jun. 11, 1979, Ser. No. 47,297
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—59



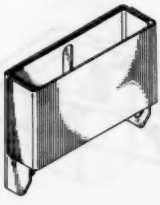
260,305
LIGHTED TRAVELING MIRROR
Francis W. MacGregor, New Britain, Conn., and Paul D. Burian, deceased late of Elmsford, N.Y., assignors to Clairol Incoporated, New York, N.Y.
Filed Mar. 28, 1979, Ser. No. 24,622
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—67



260,306
COMBINED BIRD CAGE ROOF AND BOTTOM TRAY
Michael Biro, and Hans Muckenfuss, both of Montreal, Canada, assignors to Rolf C. Hagen Ltd., Montreal, Canada
Filed Oct. 16, 1979, Ser. No. 85,197
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—4



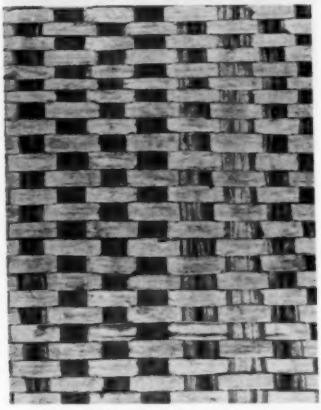
260,307
STIRRUP STRAP BUCKLE
Thomas A. Horst, Lafayette, and Charles L. Welton, Golden, both of Colo., assignors to Thomas A. Horst, Lafayette, Colo., a part interest
Filed Jan. 2, 1979, Ser. No. 197
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—25



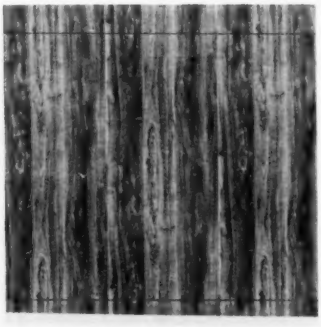
260,308
ANIMAL NAIL CLIPPER
Bernard Suchowski, Marboro, N.J., assignor to The Hartz Mountain Corporation, Harrison, N.J.
Filed Jun. 12, 1979, Ser. No. 47,770
Term of patent 7 years
Int. Cl. D30—*99*
U.S. Cl. D30—40

260,309
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Luzerne, Switzerland
Filed Aug. 30, 1979, Ser. No. 71,397
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 305
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E

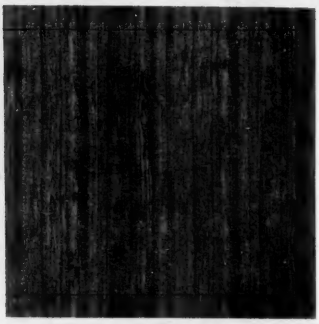
260,310
LAMINATE SHEET
William F. Yates, London, England, and Ichiro Saito, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Feb. 9, 1979, Ser. No. 10,770
Claims priority, application United Kingdom, Oct. 2, 1978, 986652/78
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 AA



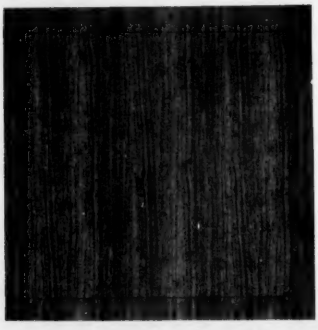
260,311
LAMINATE SHEET
Harry R. Ford, Parkdale, Ohio, and Yasuo Yoshihashi, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Jul. 11, 1978, Ser. No. 923,610
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R



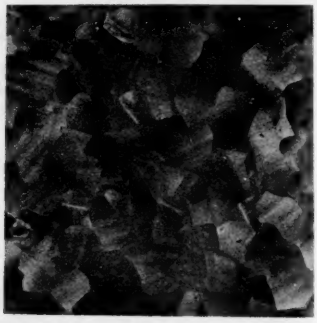
260,312
LAMINATE SHEET
Harry R. Ford, Parkdale, Ohio, and Koichi Hirakawa, Chiba, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Jul. 11, 1978, Ser. No. 923,612
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R



260,313
LAMINATE SHEET
Harry R. Ford, Parkdale, Ohio, and Koichi Hirakawa, Chiba, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Jul. 11, 1978, Ser. No. 923,614
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R

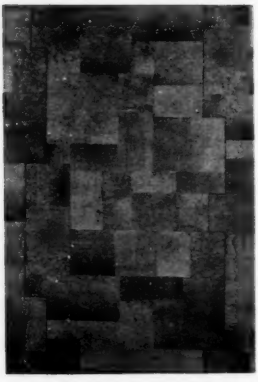


260,314
LAMINATE SHEET
William F. Yates, London, England, and Ichiro Saito, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Feb. 9, 1979, Ser. No. 10,771
Claims priority, application United Kingdom, Sep. 14, 1978, 986361/78
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R

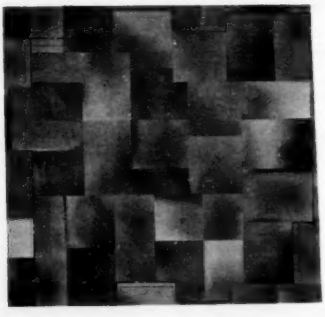


260,315
LAMINATE SHEET
William F. Yates, London, England, and Ichiro Saito, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Feb. 9, 1979, Ser. No. 11,013
Claims priority, application United Kingdom, Oct. 11, 1978, 986804/78
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R

260,316
LAMINATE SHEET
William F. Yates, London, England, and Ichiro Saito, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Feb. 9, 1979, Ser. No. 11,014
Claims priority, application United Kingdom, Aug. 17, 1978, 985963/78
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R

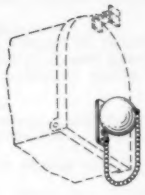


260,317
LAMINATE SHEET
William F. Yates, London, England, and Ichiro Saito, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio
Filed Feb. 9, 1979, Ser. No. 11,015
Claims priority, application United Kingdom, Oct. 2, 1978, 986649/78
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 R



260,318
TOY BANK
Sadayasu Miyazaki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 19, 1979, Ser. No. 4,663
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—38

260,319
MAIL BOX SIGNAL
William E. Kuntz, Jr., 2724 S. Range Rd., Columbiana, Ohio 44408
Filed May 24, 1979, Ser. No. 42,205
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—29



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PATENTS WERE ISSUED ON THE 18TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, 4,284,054, Cl. 123-536.000.
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Abura, Yoshinori; Ueda, Fumiya; Morihara, Nobuyuki; and Kami, Tomohiro, to Matsushita Electric Works, Ltd. Electrically heated hair curler. 4,284,877, Cl. 219-222.000.

ACF Industries, Inc.: *See*—
Basch, Walter E., 4,284,390, Cl. 417-313.000.
Hrinsin, John A., 4,284,012, Cl. 105-362.000.
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Adams, Harold R. Packing pulverizer. 4,284,248, Cl. 241-278.00R.

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Adams, John O.: *See*—
Moore, Sanders H.; and Adams, John O., 4,284,460, Cl. 156-306.600.

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Porter, Allan W. H.; and Lucian, Anton, 4,284,108, Cl. 139-448.000.

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Wilcox, Martin H., 4,285,010, Cl. 358-112.000.

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Satoh, Takehiko; Tsukahara, Sonoko; and Tsushima, Tachiro, 4,284,441, Cl. 148-120.000.

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Bergthaller, Peter; Saleck, Wilhelm; and Helling, Gunter, 4,284,718, Cl. 430-629.000.

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Borowski, Kurt; and Ganser, Josef, 4,284,339, Cl. 354-38.000.
Helling, Gunter; Krafft, Werner; Findeisen, Kurt; and Himmelmann, Wolfgang, 4,284,708, Cl. 430-216.000.
Nagel, Erich; Ziegler, Franz; and Schaner, Ferdinand, 4,284,221, Cl. 225-100.000.
Schroder, Rolf; Engelsmann, Dieter; Lermann, Peter; and Spinnler, Rainer, 4,284,342, Cl. 354-60.00E.

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Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,283,930, Cl. 72-8.000.

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Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, 4,284,897, Cl. 250-461.00B.

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Remillieux, Jean, 4,284,419, Cl. 55-96.000.

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Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, 4,284,721, Cl. 435-70.000.

Akahira, Rokuro; and Someya, Shinzo, to Kanesho Company Limited. Herbicidal composition for paddy fields. 4,284,427, Cl. 71-93.000.

Akkerman, James W., to United States of America, National Aeronautics and Space Administration. Reciprocating engines. 4,283,995, Cl. 91-410.000.

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Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.

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Hubertson, Folke H., 4,284,264, Cl. 251-305.000.

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Akzona Incorporated: *See*—
Franks, Neal E.; and Varga, Julianna K., 4,284,545, Cl. 260-29.6NR.
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,284,772, Cl. 544-218.000.
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Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, 4,284,041, Cl. 123-193.00H.

Albrecht, Harald; and Schnettler, Roland, to Maschinen- und Werkzeugbau GmbH. Roller electrode and process for making same. 4,284,179, Cl. 191-1.00A.

Albright, Charles D., to FMC Corporation. Vehicle with dual drill booms and temporary roof support. 4,284,368, Cl. 405-291.000.

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Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., 4,283,996, Cl. 91-447.000.

Alexander, Willis R.; and Shaltis, Robert J., to Hastings Manufacturing Company. Centrifugal spin-on filter or separator and method of making and assembling the same. 4,284,504, Cl. 210-168.000.

Allan, Colin J.; Shields, Ross B.; Cuttler, Jerry M.; and Lynch, Gerard F., to Canada, Atomic Energy of, Limited. Self-powered neutron and gamma-ray flux detector. 4,284,893, Cl. 250-390.000.

Alldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., to National Research Development Corporation. Processing of digital signals. 4,284,351, Cl. 356-28.500.

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Garrett, Robert A.; Silva, John; and Allen, Craig R., 4,284,929, Cl. 318-51.000.

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Brumbaugh, Owen E., Jr.; Levin, Paul; and Reed, Alston L., 4,284,380, Cl. 414-21.000.

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Allen, Louis B., Jr.; Koenig, Herbert G., Jr.; and Rice, Robert R., to McDonnell Douglas Corporation. Etalon laser diode. 4,284,963, Cl. 331-94.50H.

Allen, Roger E.: *See*—
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,284,962, Cl. 331-94.50F.

Allied Chemical Corporation: *See*—
Gancy, Alan B.; and Wamser, Christian A., 4,284,611, Cl. 423-308.000.

Allis-Chalmers Corporation: *See*—
Hansen, Kenneth N., 4,283,965, Cl. 74-482.000.

Allred, Richard E., to UOP Inc. Coated screen jacket and coated pipe base assembly and method of making same. 4,284,138, Cl. 166-233.000.

Almashegyi, Lajos: *See*—
Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef, 4,284,436, Cl. 148-2.000.

Almeda, Benjamin M., Jr. Material compacting apparatus. 4,284,000, Cl. 100-229.00A.

Almqvist, Christer; and Lindahl, Lars, to ReHeat AB. Device for mutually fixing plate elements of plate heat exchangers or plate filters. 4,284,135, Cl. 165-166.000.

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Alt, Gerhard H.; and Chupp, John P., to Monsanto Company. Process for the in-solvent, in-situ generation of haloalkyl alkyl ethers useful to produce N-substituted-2-haloacetanilides. 4,284,564, Cl. 260-333.000.

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McCaskill, Matt L., 4,284,259, Cl. 248-346.000.

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Culleiton, Charles J.; Das, Subodh K.; and Schoener, Ronald C., 4,284,607, Cl. 423-137.000.
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Alyabiev, Vitaly K.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,283,991, Cl. 91-299.000.

Amada Company Ltd.: *See*—
Kasai, Shigeo; Nishiyama, Toshiaki; and Kawada, Kiju, 4,283,978, Cl. 83-620.000.

Amana Refrigeration, Inc.: *See*—
Simpson, James E., 4,284,868, Cl. 219-10.55F.

Amatuzio, Albert J.: *See*—
Borgren, Peter M.; and Amatuzio, Albert J., 4,284,902, Cl. 290-53.000.

Amax, Inc.: *See*—
Hoover, Maurice R.; Malhotra, Deepak; Bender, Fredrick N.; and Ronzio, Richard A., 4,284,244, Cl. 241-24.000.

American Atomics Corporation: *See*—
McCoy, Marshall W., 4,285,029, Cl. 362-84.000.

American Can Company: *See*—
Sheptak, Nicholas, 4,284,674, Cl. 428-69.000.
Walbrun, Lawrence A., 4,284,465, Cl. 156-513.000.

American Cyanamid Co.: *See*—
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Bezwada, Rao S., 4,284,536, Cl. 260-4.0AR.
Buell, Bennett G., 4,284,774, Cl. 544-348.000.
Chang, Eugene Y. C., 4,284,740, Cl. 525-292.000.
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Hanifin, John W., Jr.; and Ridge, David N., 4,284,785, Cl. 548-248.000.
Tien, Hsuan L.; and Olson, Kenneth E., 4,284,771, Cl. 544-200.000.

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American Electronic Laboratories, Inc.: *See*—
Pessel, Leopold, 4,284,608, Cl. 423-242.000.

American Home Products Corporation: *See*—
King, Phillip W., 4,284,252, Cl. 242-198.000.
Santilli, Arthur A., 4,284,768, Cl. 544-128.000.

American Hospital Supply Corporation: *See*—
Gauthier, Robert O., 4,284,268, Cl. 269-328.000.

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American Optical Corporation: *See*—
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American Safety Razor Company: *See*—
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American Sterilizer Company: *See*—
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Bryce, James R.; and Stillie, Donald G., 4,284,866, Cl. 200-159.00B.
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Andersen, Shirley R.: *See*—
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Chaney, Clarence E., 4,284,734, Cl. 525-92.000.
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Toulios, Peter P.; and Hartman, Kenneth D., 4,283,989, Cl. 89-6.500.

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Arnell, Claes G.; and Olsson, Erik G., to Forenade Fabriksverken. Projectile with at least one expellable subprojectile. 4,284,007, Cl. 102-477.000.

Arneson, Robert L.: *See*—
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Brunosson, Gunnar; Larsson, Hans-Gunnar; and Westman, Erik, 4,284,393, Cl. 425-7.000.

Ashida, Shinichiro: *See—*
Ishikawa, Fumiyoshi; and Ashida, Shinichiro, 4,284,773, Cl. 544-247.000.

Aslund, Christer: *See—*
Gemmel, Goran; and Aslund, Christer, 4,284,439, Cl. 148-12.0EA.

Astec Industries, Inc.: *See—*
Mize, Erbie G., 4,284,203, Cl. 220-345.000.

Atlantic Richfield Company: *See—*
Airhart, Tom P., 4,284,164, Cl. 181-117.000.
Airhart, Tom P.; and Barta, Henry R., 4,284,165, Cl. 181-119.000.
Pritchett, William C., 4,284,163, Cl. 181-113.000.
Sheets, Jesse E.; Vitchus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., 4,284,402, Cl. 431-9.000.

Atsumi, Fumitoshi: *See—*
Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Iizaka, Isao, 4,284,344, Cl. 355-14.00E.

Auinger, Herbert, to Siemens Aktiengesellschaft. Pole changeable three phase winding. 4,284,919, Cl. 310-198.000.

Auretta, Frank. Hairpiece attaching structure and method. 4,284,092, Cl. 132-53.000.

Austin, Marvin L. Hunter's knife. 4,283,854, Cl. 30-314.000.

Austin, William B.; and Bilow, Norman, to Hughes Aircraft Company. Diethynyl aromatic hydrocarbons which homopolymerize and char efficiently after cure. 4,284,834, Cl. 585-25.000.

Auto Specialties Manufacturing Company: *See—*
Nordlin, William F., 4,284,113, Cl. 144-193.00A.

Autoclave Engineers, Inc.: *See—*
Ruyak, Robert F., 4,284,262, Cl. 251-65.000.

Automatic Material Handling, Inc.: *See—*
Keller, Alex J.; Flowers, Thad; Williams, Joseph R.; and Patel, Navinchandra K., 4,283,909, Cl. 57-306.000.

Autotronic Controls Corp.: *See—*
Merrick, James W., 4,284,053, Cl. 123-497.000.

Avco Corporation: *See—*
Salvana, Frank; and Junker, Arnold, 4,284,174, Cl. 184-6.400.

Awano, Shunya; and Shittaka, Akio, to Ichikawa Woolen Textile Co., Ltd. Multi-layered, needle punched, felt-like cushioning material and production method thereof. 4,284,680, Cl. 428-234.000.

Azalbert, Pierre. Spray nozzle for distribution of liquid which is intended to be affixed transversely to the wall of a conduit. 4,284,241, Cl. 239-272.000.

B & B Miniatures The Whimsey: *See—*
Nye, LaVonne, 4,284,215, Cl. 223-33.000.

B. F. Goodrich Company, The: *See—*
Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,284,742, Cl. 525-329.000.
Gilles, Jack C., 4,284,483, Cl. 204-158.00R.

Baba, Yoshio; Tsuchida, Shin; and Tobinaga, Masaaki, to Sumitomo Light Metal Industries, Ltd. Process for preparing hard tempered aluminum alloy sheet. 4,284,437, Cl. 148-11.50A.

Bachmann, Lothar: *See—*
Papistok, Heinz; Reuter, Herbert; and Bachmann, Lothar, 4,284,376, Cl. 409-24.000.

Bader, Robert F. Culture sampling device. 4,284,446, Cl. 156-69.000.

Bagga, Madan M., to Ciba-Geigy Corporation. Diglycidyl ethers of di-secondary alcohols, their preparation, and curable compositions containing them. 4,284,574, Cl. 260-348.430.

Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Intermediate racemates for the preparation of biotin and a process for their preparation. 4,284,557, Cl. 260-239.30B.

Baier, Anton: *See—*
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,284,088, Cl. 131-280.000.

Bailey, Leonard K.: *See—*
George, David B.; and Bailey, Leonard K., 4,283,947, Cl. 73-863.110.

Bailey, Ronald B.; and Stitt, Thomas D., to General Electric Company. Chopper type propulsion system with low speed electrical braking capability for traction vehicles. 4,284,936, Cl. 318-381.000.

Bailey, Ronald B., to General Electric Company. Chopper with adaptive energy commutation. 4,284,938, Cl. 318-432.000.

Baker, Charles T., to Wiremold Company, The. Service pole assembly. 4,284,840, Cl. 174-48.000.

Baker Perkins Inc.: *See—*
Todd, David B., 4,284,232, Cl. 233-15.000.

Balestrino, Giovanni: *See—*
Gallizio, Gabriele; and Balestrino, Giovanni, 4,283,830, Cl. 29-407.000.

Ball Corporation: *See—*
McDowell, Jerry T., 4,284,693, Cl. 429-211.000.

Baltz, Gene F.; and DuBois, Chester G., to Outboard Marine Corporation. Fuel primer for an internal combustion engine. 4,284,040, Cl. 123-187.50R.

Baranoff, Nicolas. Automatic discharge valve for liquids. 4,284,260, Cl. 251-45.000.

Barbour, Robert E., Jr. Device and method for collecting blood plasma. 4,284,209, Cl. 222-1.000.

Barl, Manfred: *See—*
Degner, Dieter; Barl, Manfred; and Siegel, Hardo, 4,284,825, Cl. 568-592.000.

Barnes, Lyle K.; and Barringer, Richard C., to Milton Roy Company. Oxygen analyzer probe. 4,284,487, Cl. 204-195.00S.

Barnhardt, Scott B., to Westinghouse Electric Corp. Cooling arrangement for an integrated drive-generator system. 4,284,913, Cl. 310-54.000.

Baron Hire Limited: *See—*
West, Frank E., 4,284,038, Cl. 123-46.00A.

Barrett Electronics Corporation: *See—*
DeLiban, Robert; and Lieby, David G., 4,284,160, Cl. 180-168.000.

Barringer, Richard C.: *See—*
Barnes, Lyle K.; and Barringer, Richard C., 4,284,487, Cl. 204-195.00S.

Barry, George H.: *See—*
Dahl, Ernest A.; and Barry, George H., 4,284,951, Cl. 324-430.000.

Barstow, Norman C., Jr., to Hardigg Industries, Inc. Reusable container. 4,284,202, Cl. 220-4.00B.

Barta, Henry R.: *See—*
Airhart, Tom P.; and Barta, Henry R., 4,284,165, Cl. 181-119.000.

Bartels, Harold U., to Bourns Medical Systems, Inc. Fluid level detector. 4,284,878, Cl. 219-272.000.

Barth, Gerald D.: *See—*
Peterson, Francis C.; Barth, Gerald D.; and Slotten, Rodney O., 4,283,986, Cl. 411-340.000.

Bartholic, David B.; and Byrne, John W., to Engelhard Minerals & Chemicals Corporation. Control of emissions in FCC regenerator flue gas. 4,284,494, Cl. 208-164.000.

Bartoli, Filbert J.: *See—*
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,284,962, Cl. 331-94.50F.

Barton, Derek H. R.; and Hesse, Robert H., to Research Institute for Medicine and Chemistry, Inc. Chemical process for fluorinating a tertiary carbon atom in the steroid nucleus. 4,284,558, Cl. 260-239.55R.

Barwick, Donald; and Brownlee, Malcolm, to British Steel Corporation. Manufacture of steel products. 4,284,438, Cl. 148-12.00B.

Basch, Walter E., to ACF Industries, Inc. Collar. 4,284,390, Cl. 417-313.000.

BASF Aktiengesellschaft: *See—*
Degner, Dieter; Barl, Manfred; and Siegel, Hardo, 4,284,825, Cl. 568-592.000.
Fischer, Rolf; and Weitz, Hans-Martin, 4,284,796, Cl. 560-262.000.
Kramer, Peter, 4,284,502, Cl. 210-98.000.

BASF Wyandotte Corporation: *See—*
Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., 4,284,728, Cl. 521-155.000.
Narayan, Thirumurti; and Kan, Peter T., 4,284,730, Cl. 521-160.000.

Bassotti, Armando, to Fabrica de Aparatos de Aire Acondicionado. Thermal exchange system and apparatus. 4,283,916, Cl. 62-5.000.

Batshaw, Mark L.: *See—*
Brusilow, Saul W.; Batshaw, Mark L.; and Radin, Norman S., 4,284,647, Cl. 424-317.000.

Batson, William A., to Singer Company, The. Motorized miter chop saw with work-piece clamp. 4,283,977, Cl. 83-453.000.

Baudat E. Wolter KG: *See—*
Wolter, Eckhard, 4,283,851, Cl. 30-134.000.

Bawarshi, Rima: *See—*
Hussain, Anwar A.; Hirai, Shinichiro; and Bawarshi, Rima, 4,284,648, Cl. 424-330.000.

Baxter Travenol Laboratories, Inc.: *See—*
Pope, J. Lee, Jr.; and Scott, James W., 4,284,505, Cl. 210-236.000.

Bayer Aktiengesellschaft: *See—*
Findeisen, Kurt, 4,284,584, Cl. 260-545.00R.
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,284,643, Cl. 424-282.000.
Fuchs, Rainer; and Stendel, Wilhelm, 4,284,645, Cl. 424-304.000.
Grohe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,284,629, Cl. 424-246.000.
Knupfer, Hans; and Schellhammer, Carl-Wolfgang, 4,284,787, Cl. 548-256.000.
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Plempel, Manfred, 4,284,639, Cl. 424-269.000.
Lunkenheimer, Winfried; Brandes, Wilhelm; and Kraus, Peter, 4,284,791, Cl. 560-43.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,284,411, Cl. 8-506.000.
Preuss, Reinhard; Charlet, Egbert; Finkel, Peter; and Rosenkranz, Hans J., 4,284,621, Cl. 424-59.000.
Schenk, Norbert; Krekel, Jorg; Losacker, Paul; and Swodenk, Wolfgang, 4,284,576, Cl. 260-369.000.
Seidler, Helmut, 4,284,560, Cl. 260-314.500.
Wegner, Christian; Findeisen, Kurt; and Weider, Franz, 4,284,544, Cl. 260-29.2TN.

BBC Brown, Boveri & Co., Ltd.: *See—*
Galliker, Franz; and Knapp, Peter, 4,284,933, Cl. 318-345.00C.
Sterlini, Jacques, 4,284,480, Cl. 203-24.000.
Stucheli, Albin; and Trindler, Walter, 4,284,688, Cl. 428-559.000.

Beachey, Edwin H., to United States of America, Health and Human Services. Conjugate of streptococcal M protein peptide vaccine. 4,284,537, Cl. 260-6.000.

Beane, Frank T. Knit pile filter. 4,284,507, Cl. 210-435.000.

Beasley, Thomas T.; and Hanley, Brian G. Means for imaging a lithographic plate. 4,284,349, Cl. 355-79.000.

Beck, Lee R. Method of treating inflammation using bovine milk. 4,284,623, Cl. 424-85.000.

Becker, Bernard B.; Bowman, John K.; and Randall, Cyril A., to Amtrol Inc. In line back flow preventer. 4,284,097, Cl. 137-218.000.

Beckman Instruments, Inc.: *See—*
Ehret, Robert J., 4,284,931, Cl. 318-318.000.
Beebe, Lee M. Gripping device for tooth brushes. 4,283,808, Cl. 15-145.000.
Beecham Group Limited: *See—*
Rogers, Norman H.; and O'Hanlon, Peter J., 4,284,570, Cl. 260-345.70R.
Beghini, Pierre-Gino. Safety valve for packages. 4,284,104, Cl. 137-859.000.
Behrend, Rudiger. Tent structure with support arches. 4,284,094, Cl. 135-3.00R.
Behrenz, Wolfgang: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,284,643, Cl. 424-282.000.
Bel Fuse Inc.: *See—*
Bernstein, Elliot, 4,284,319, Cl. 339-147.00P.
Belart, Juan, to ITT Industries, Inc. Power brake unit. 4,283,994, Cl. 91-391.00R.
Belcher, Claude A. Pest eliminator. 4,284,845, Cl. 179-1.00R.
Belew, Robert R., to United States of America, National Aeronautics and Space Administration. Biocentrifuge system capable of exchanging specimen cages while in operational mode. 4,284,034, Cl. 119-17.000.
Bell, Alan E., to RCA Corporation. Replicable optical recording medium. 4,285,056, Cl. 369-100.000.
Bell & Howell Company: *See—*
Gordon, Gary G., 4,284,995, Cl. 346-136.000.
Bell, Michael L.: *See—*
Kelton, Arden A.; Waters, William P.; Shrunk, David G.; and Bell, Michael L., 4,284,602, Cl. 422-72.000.
Bell Telephone Laboratories: *See—*
Jaccodine, Ralph J.; and Kestenbaum, Ami, 4,284,659, Cl. 427-53.100.
Bell Telephone Laboratories, Inc.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,284,842, Cl. 174-107.000.
Berrin, Lloyd; Cohen, Howard M.; Grupen, William B.; and McElroy, James D., 4,284,970, Cl. 338-195.000.
Carruthers, John R.; Kaminow, Ivan P.; and Schmidt, Ronald V., 4,284,663, Cl. 427-164.000.
Craighead, Harold G.; and Howard, Richard E., 4,284,689, Cl. 428-620.000.
Gans, Michael J., 4,284,992, Cl. 343-909.000.
Ho, Edmond Y., 4,285,061, Cl. 375-15.000.
Liao, Paul F., 4,284,354, Cl. 356-301.000.
Rosenzweig, Walter, 4,284,905, Cl. 307-482.000.
Schweitzer, Philip F.; and Shine, John R., 4,284,851, Cl. 179-18.0DA.
Yahalom, Joseph, 4,284,482, Cl. 204-140.000.
Belles, David E., to Belles Research Corp. Loudspeaker system. 4,284,844, Cl. 179-1.00E.
Belles Research Corp.: *See—*
Belles, David E., 4,284,844, Cl. 179-1.00E.
Bellicardi, Francesco; de Concini, Roberto; and Bolelli, Rino, to Edoardo Weber S.p.A. Pressure regulator for injection systems for internal combustion engines. 4,284,039, Cl. 123-463.000.
Bellotti, Silvio: *See—*
Rakocy, William J.; and Bellotti, Silvio, 4,283,979, Cl. 83-666.000.
Bellus, Daniel: *See—*
Martin, Pierre; and Bellus, Daniel, 4,284,821, Cl. 568-381.000.
Belousov, Anatoly V.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,283,991, Cl. 91-299.000.
Belyaev, Nikolai A.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,283,991, Cl. 91-299.000.
Bender, Fredrick N.: *See—*
Hoover, Maurice R.; Malhotra, Deepak; Bender, Fredrick N.; and Ronzio, Richard A., 4,284,244, Cl. 241-24.000.
Bendiks, Donald J. Gravity fed power generator. 4,284,899, Cl. 290-1.00R.
Bendix Corporation, The: *See—*
Hanisko, John C. P., 4,284,052, Cl. 123-490.000.
Pyles, Eliot T., 4,283,833, Cl. 29-441.00R.
Sharrow, John A., 4,284,946, Cl. 324-56.000.
Benjamin, Benjamin C.; and Detweiler, Charles A., to Schmelzer Corporation. Stroke adjustment for vacuum motor. 4,284,261, Cl. 251-60.000.
Beno, Lawrence A.; Harrell, John T.; Evans, Albert B., Jr.; and Gaudig, Jay R., to United States of America, Navy. Pulse repetition interval generator with stagger compensation. 4,284,955, Cl. 328-111.000.
Bergthaller, Peter; Saleck, Wilhelm; and Helling, Gunter, to Agfa-Gevaert AG. Photographic silver halide materials containing sulfur containing polymers. 4,284,718, Cl. 430-629.000.
Bernelin, Daniel: *See—*
Meyer, Jacques; and Bernelin, Daniel, 4,284,745, Cl. 525-408.000.
Berner, Godwin, to Ciba-Geigy Corporation. Photocurable compositions. 4,284,485, Cl. 204-159.150.
Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., to Herculite Protective Fabrics Corporation. Activated polymer materials and process for making same. 4,284,444, Cl. 156-60.000.
Bernstein, Elliot, to Bel Fuse Inc. Crimp fuse. 4,284,319, Cl. 339-147.00P.
Berrin, Lloyd; Cohen, Howard M.; Grupen, William B.; and McElroy, James D., to Bell Telephone Laboratories, Incorporated. Fabrication of film resistor circuits. 4,284,970, Cl. 338-195.000.
Bertolini, Guglielmo: *See—*
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,284,526, Cl. 252-429.00C.
Bertram, Claus; and Lorenz, Georg M., to O & K Orenstein & Koppel Aktiengesellschaft and Lorenz GmbH. Sealing for machine elements which move back and forth. 4,284,280, Cl. 277-27.000.
Berwick, Martin A.; and Riecke, Edgar E., to Eastman Kodak Company. Polyester binder component in multilayer photoconductive element. 4,284,699, Cl. 430-96.000.
Besserman, Richard. Audiometric testing, analyzing, and recording apparatus and method. 4,284,847, Cl. 179-1.00N.
Bessone, Carlo S.; and Roche, William J., to GTE Products Corporation. Multiple level dimming circuit for fluorescent lamp. 4,284,925, Cl. 315-240.000.
Bethge, Dietrich: *See—*
Bethge, Walther; and Bethge, Dietrich, 4,284,452, Cl. 156-99.000.
Bethge, Walther; and Bethge, Dietrich, to Therglas GmbH fur Flachenheizung. Method of embedding thin wires in laminated glass. 4,284,452, Cl. 156-99.000.
Beyeler, Harry: *See—*
Furrer, Peter; and Beyeler, Harry, 4,284,797, Cl. 562-434.000.
Beyl, Earl L., Jr.; and Cunningham, William C., to Traintronics Inc. Sequential light circuit. 4,284,954, Cl. 328-75.000.
Bezwada, Rao S., to American Cyanamid Co. Composition for adhesion of rubber to reinforcing materials. 4,284,536, Cl. 260-4.0AR.
BICC Limited: *See—*
Collier, John C., 4,283,846, Cl. 29-753.000.
Pigott, Stanley W.; and Gregory, Peter, 4,283,931, Cl. 72-45.000.
Biethan, Uwe: *See—*
Hahn, Karl; and Biethan, Uwe, 4,284,836, Cl. 585-438.000.
Bigarella, Federico, to Lezard S.A. Container with tear-opening arrangement. 4,284,199, Cl. 215-32.000.
Bigley, William J.; and Rizzo, Vincent J., to Lockheed Electronics Co., Inc. Load driving apparatus. 4,284,942, Cl. 318-618.000.
Bijkerk, Albert H.: *See—*
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,284,772, Cl. 544-218.000.
Billco Manufacturing, Inc.: *See—*
Trautmann, Hugh M., 4,283,981, Cl. 83-884.000.
Bilobran, William L.: *See—*
Danler, Richard W.; and Bilobran, William L., 4,284,370, Cl. 406-86.000.
Bilow, Norman: *See—*
Austin, William B.; and Bilow, Norman, 4,284,834, Cl. 585-25.000.
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., to Kendall Company, The. Syringe assembly. 4,284,084, Cl. 128-748.000.
Bird, Richard M.; and Tu, Ju C., to Operating Systems, Inc. Apparatus and method for selecting finite success states by indexing. 4,285,049, Cl. 364-900.000.
Birlain-Noris, Armando. Presensitized planographic printing plates with cobalt adhesive layer. 4,284,711, Cl. 430-276.000.
Bizard, Andre G. M. A., to Technos. Cleaning of heat exchangers composed of tubes. 4,283,807, Cl. 15-3.510.
Black & Decker Inc.: *See—*
Hetmanski, James R., 4,283,971, Cl. 81-9.510.
Sides, Daniel H., 4,284,284, Cl. 279-19.500.
Black, Robert B. Sensor alarm and support. 4,284,981, Cl. 340-545.000.
Blad, Leiv H.; and Griffin, Charles F., to Lockheed Corporation. Filled resin coated tape. 4,284,679, Cl. 428-218.000.
Blake, Robert J.; and Roy, Guy W., to Stauffer Chemical Company. Catalyst regeneration. 4,284,833, Cl. 570-224.000.
Blanco, Fernando E.: *See—*
Hutt, Jack W.; and Blanco, Fernando E., 4,284,751, Cl. 528-45.000.
Blass, Jaroslav, to Kawasaki Motors Corp., U.S.A. Suspension system for snowmobiles. 4,284,161, Cl. 180-184.000.
Bleicher, Manfred: *See—*
Wanner, Karl; and Bleicher, Manfred, 4,284,148, Cl. 173-109.000.
Bleymaier, Joseph S.: *See—*
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Blumfeld, Georg: *See—*
Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,284,732, Cl. 252-609.000.
Boart International Limited: *See—*
Grabe, Johan G., 4,284,136, Cl. 166-117.500.
Bobbitt, John T., to Litton Resources Systems, Inc. Roll-along switch. 4,285,052, Cl. 367-79.000.
Bodenseewerk Geratetechnik GmbH: *See—*
Strittmatter, Bernhard; and Syre, Wolfgang, 4,283,959, Cl. 74-5.700.
Bodenseewerk Perkin-Elmer: *See—*
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Boehringer Mannheim GmbH: *See—*
Friebe, Walter-Gunar; Thiel, Max; Kampe, Wolfgang; Wilhelms, Otto-Henning; and Roesch, Androniki, 4,284,633, Cl. 424-253.000.
Boeing Company, The: *See—*
Hilton, R. John, 4,284,443, Cl. 156-60.000.

Boer, Edo; and Vogt, Sybrand W., to Volvo Car B.V. Automatic variable power transmission. 4,284,408, Cl. 474-14.000.
Bohner, Beat; and Rempfler, Hermann, to Ciba-Geigy Corporation. Herbicidal α-[4-trifluoromethylphenoxy)-propionic acid γ-butyrolactone ester and thioester. 4,284,566, Cl. 260-343.600.
Bokelmann, Horst, to Metzeler Schaum GmbH. Apparatus for the manufacture of a foam material ball with an embossed surface. 4,284,398, Cl. 425-394.000.
Bolelli, Rino: *See*—
Bellicardi, Francesco; de Concini, Roberto; and Bolelli, Rino, 4,284,039, Cl. 123-463.000.
Bolex International SA: *See*—
Heiniger, Wilfred; Kreienbuhl, Claude; and Millan, Manuel, 4,283,863, Cl. 354-25.000.
Bolle, Jean; and Dabir, Andre, to Institut National de Recherche Chimique Appliquee. Stable and non-corrosive polysulphides derived from olefins and having different sulphur contents, process for their manufacture and applications thereof. 4,284,520, Cl. 252-45.000.
Bollinger, Frederick W.; and Hazen, George G., to Merck & Co., Inc. Substituted benzenesulfonylazides. 4,284,575, Cl. 260-349.000.
Bondaletov, Vladimir N.: *See*—
Iosifian, Andronik G.; Fotin, Vladilen P.; Bondaletov, Vladimir N.; Lapshin, Evgeny I.; Ostrovsky, Alexandr S.; and Savchenko, Alexandr I., 4,284,927, Cl. 315-340.000.
Bondoc, Alfredo A., to GAF Corporation. High-strength roofing products using novel glass fiber mats. 4,284,470, Cl. 162-123.000.
Boothe, Nathaniel L. Exercise device. 4,284,274, Cl. 272-116.000.
Borg-Warner Corporation: *See*—
Hallberg, Irving H., 4,284,588, Cl. 261-36.00A.
Borgren, Peter M.; and Amatuzio, Albert J., to Hydrodynamic Energy Systems Corp. Wave action generating system. 4,284,902, Cl. 290-53.000.
Borjesson, Anders, to Aktiebolaget Tudor. Apparatus for producing electrical batteries. 4,284,185, Cl. 198-339.000.
Boros, Eugene J.; and Peck, David W., to Union Carbide Corporation. Process for treating anion exchange resins. 4,284,727, Cl. 521-28.000.
Borowski, Kurt; and Ganser, Josef, to AGFA-Gevaert Aktiengesellschaft. Programmable fully automatic shutter system for photographic cameras. 4,284,339, Cl. 354-38.000.
Borysiak, Ralph A. Electrostatic air cleaner with scraper cleaning of collector plates. 4,284,420, Cl. 55-114.000.
Bosmiller, Erich: *See*—
Lechner, Karl; and Bosmiller, Erich, 4,283,956, Cl. 73-799.000.
Bottrill, John: *See*—
Hayward, Richard; Bottrill, John; and Dittburner, Robert C., 4,284,854, Cl. 179-84.0VF.
Botts, Elton M. Closed loop energy conversion system. 4,284,900, Cl. 290-43.000.
Botts, William M. Egg fluffer. 4,284,361, Cl. 366-343.000.
Bouldin, Eric W.: *See*—
Drexler, Jerome; and Bouldin, Eric W., 4,284,716, Cl. 430-510.000.
Bourns Medical Systems, Inc.: *See*—
Bartels, Harold U., 4,284,878, Cl. 219-272.000.
Bowen, Richard E.; Robb, Robert A.; Dengel, Ottmar H.; Gotzmer, Carl; and Pisacane, Frank J., to United States of America, Navy. Solid compositions for generation fluorine and gaseous fluorine compounds. 4,284,617, Cl. 423-504.000.
Bowerman, Harold H., Jr.; and Ireland, Robert W., to B. F. Goodrich Company, The. Puncture-sealing tire. 4,284,742, Cl. 525-329.000.
Bowman, John K.: *See*—
Becker, Bernard B.; Bowman, John K.; and Randall, Cyril A., 4,284,097, Cl. 137-218.000.
Bowser, Milford D.; and Vandre, Vallace W., to Cargill, Incorporated. Sampling probe for granular material. 4,283,946, Cl. 73-864.310.
Boyce, Richard J.; and Cooper, Terence A., to Du Pont de Nemours, E. I., and Company. Hot melt adhesive composition. 4,284,542, Cl. 260-27.00R.
Boyd, Clinton A.: *See*—
Tijunelis, Donatas; Boyd, Clinton A.; and Vandevier, Joseph E., 4,284,841, Cl. 174-103.000.
Bradford, Joseph. Flying toy. 4,284,278, Cl. 273-426.000.
Bradshaw, Norman F., to Carrier Drysys Limited. Air conditioning system. 4,284,236, Cl. 236-49.000.
Brand, Peter; Pinck, Peter; and Baier, Anton, to Hauni-Werke Korber & Co. KG. Method of monitoring filter rod sections in filter tipping machines. 4,284,088, Cl. 131-280.000.
Brandenstein, Manfred: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.
Brandes, Wilhelm: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Plempel, Manfred, 4,284,639, Cl. 424-269.000.
Lunkenheimer, Winfried; Brandes, Wilhelm; and Kraus, Peter, 4,284,791, Cl. 560-43.000.
Braun Aktiengesellschaft: *See*—
Gaus, Harry, 4,284,168, Cl. 181-199.000.
Messinger, Werner; Ullmann, Roland; and Schweingruber, Otto, 4,283,848, Cl. 30-34.100.
Breed Corporation: *See*—
Breed, David S., 4,284,863, Cl. 200-61.530.
Breed, David S., to Breed Corporation. Velocity change sensor. 4,284,863, Cl. 200-61.530.
Bridgestone Tire Co., Ltd.: *See*—
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.
Sato, Takeshi; and Matsubara, Yoshinari, 4,284,116, Cl. 152-360.000.
Wakamiya, Masatoshi, 4,283,899, Cl. 52-699.000.
Brill-Edwards, Kenneth O. P., to Crescent Roofing Company Limited. Static solar heat collectors. 4,284,065, Cl. 126-432.000.
Brisabois, Roger; and Brut, Gerard, to Regie Nationale des Usines Renault. Automatic clutch device. 4,284,183, Cl. 192-48.920.
Bristol-Myers Company: *See*—
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,284,568, Cl. 260-345.200.
British Steel Corporation: *See*—
Barwick, Donald; and Brownlee, Malcolm, 4,284,438, Cl. 148-12.00B.
Brittain, Robert; and Hickman, Andrew L., to Global Cathodic Protection, Ltd. Sacrificial anode assembly. 4,284,488, Cl. 204-197.000.
Britton, George H., Jr.: *See*—
Cross, John P.; and Britton, George H., Jr., 4,284,729, Cl. 521-158.000.
Brodrene Gram A/S: *See*—
Gram, Hans, 4,284,188, Cl. 198-472.000.
Brommel, Walter, to Didier Engineering GmbH. Apparatus for quenching hot coke. 4,284,478, Cl. 202-227.000.
Brongo, Ralph T.: *See*—
Fleming, James C.; Manthey, Joseph W.; and Brongo, Ralph T., 4,284,704, Cl. 430-154.000.
Brother, Michael D.: *See*—
Yucius, Albert C.; and Brother, Michael D., 4,284,977, Cl. 340-147.00P.
Brouwer, Gerald A., to Lear Siegler, Inc. Unscrambling conveyor. 4,284,186, Cl. 198-415.000.
Brow, Robert J. Solar liquid heater. 4,284,066, Cl. 126-435.000.
Brown, Larry B., to Reynolds Metals Company. Metal construction stud and wall system incorporating the same. 4,283,892, Cl. 52-213.000.
Brown, Rodney J.; Swaisgood, Harold E.; and Horton, Horace R., to North Carolina State University at Raleigh. Reversible method for covalent immobilization of biochemicals. 4,284,553, Cl. 260-112.00R.
Brown, Stanley L., to Roscoe Brown Corporation. Backfilling apparatus with adjustable filling augers. 4,283,867, Cl. 37-142.500.
Brownlee, Malcolm: *See*—
Barwick, Donald; and Brownlee, Malcolm, 4,284,438, Cl. 148-12.00B.
Bruemmer, Joseph H., to United States of America, Agriculture. Method of preparing citrus fruit sections with fresh fruit flavor and appearance. 4,284,651, Cl. 426-50.000.
Brumbaugh, Owen E., Jr.; Levin, Paul; and Reed, Alston L., to Allen & Garcia Company. Multi-car train loading station. 4,284,380, Cl. 414-21.000.
Brunelli, Maurizio: *See*—
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,284,567, Cl. 260-345.100.
Brunn, Otto; and Nill, Eberhard, to International Standard Electric Corp. Mounting assembly for a deflection yoke. 4,285,013, Cl. 358-248.000.
Brunosson, Gunnar; Larsson, Hans-Gunnar; and Westman, Erik, to ASEA Aktiebolag. Powder manufacturing apparatus. 4,284,393, Cl. 425-7.000.
Brusilow, Saul W.; Batshaw, Mark L.; and Radin, Norman S., to Johns Hopkins University, The. Process for waste nitrogen removal. 4,284,647, Cl. 424-317.000.
Brut, Gerard: *See*—
Brisabois, Roger; and Brut, Gerard, 4,284,183, Cl. 192-48.920.
Bruzzone, Mario: *See*—
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,284,526, Cl. 252-429.00C.
Bryant, Charles P., to Lubrizol Corporation, The. Mixed alkyl esters of interpolymers for use in crude oils. 4,284,414, Cl. 44-62.000.
Bryce, James R.; and Stillie, Donald G., to AMP Incorporated. Membrane switch assembly. 4,284,866, Cl. 200-159.00B.
Bubulac, Lucia O.: *See*—
Deyhimy, Ira; Eden, Richard C.; Harris, James S., Jr.; and Bubulac, Lucia O., 4,285,000, Cl. 357-24.000.
Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Plempel, Manfred, 4,284,639, Cl. 424-269.000.
Bucovaz, Edsel T.; Morrison, John C.; Whybrew, Walter D.; and Tarnowski, Stanley J., Jr., to Research Corporation. Process for the preparation of CoA-SPC from Bakers' yeast. 4,284,552, Cl. 260-112.00R.
Buell, Bennett G., to American Cyanamid Company. Sulfoarylated nigrosine dye and use in jet-printing inks. 4,284,774, Cl. 544-348.000.
Bula, Roger M.: *See*—
Kilmer, Paul R.; and Bula, Roger M., 4,284,109, Cl. 140-122.000.
Burdette, Stephen D.: *See*—
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,284,182, Cl. 192-4.00A.
Burg, Marion, to Du Pont de Nemours, E. I., and Company. Radiation crosslinkable polyesters and polyesterethers. 4,284,710, Cl. 430-271.000.
Burl, Michael; Clow, Hugh; Harrison, Colin G.; and Young, Ian R., to E M I Limited. Imaging systems. 4,284,950, Cl. 324-320.000.

Burlage, Donald W.; and Lancaster, James F., to United States of America, Army. Circuit for test of ultra high speed digital arithmetic units. 4,285,059, Cl. 371-25.000.

Burleigh, John E.: *See—*
Uraneck, Carl A.; and Burleigh, John E., 4,284,741, Cl. 525-297.000.

Burns, Bruce P.: *See—*
Kirkendall, Richard D.; Drysdale, William H.; Kokinakis, Louise D.; and Burns, Bruce P., 4,284,008, Cl. 102-521.000.

Burr-Brown Research Corporation: *See—*
Graeme, Jerald G., 4,284,872, Cl. 219-121.0LJ.

Burroughs Corporation: *See—*
Ignatjev, Vladimir, 4,284,269, Cl. 271-122.000.
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., 4,284,988, Cl. 340-726.000.

Burroughs Wellcome Co.: *See—*
Thorogood, Peter B., 4,284,641, Cl. 424-273.00R.

Buschor, Karl: *See—*
Moos, Kurt; and Buschor, Karl, 4,284,032, Cl. 118-684.000.

Bush, Randall G.; and Gach, Peter P., to Sunbeam Plastics Corporation. Child-resistant dispensing closure. 4,284,200, Cl. 215-215.000.

Buswell, Robert E., to Western Thomson Controls, Limited. Method of making an actuating member for a thermostatically controlled valve. 4,283,823, Cl. 29-157.10R.

Butler Greenwich Inc.: *See—*
Wright, Albert L. H., 4,284,463, Cl. 156-502.000.

Byrne, John W.: *See—*
Bartholic, David B.; and Byrne, John W., 4,284,494, Cl. 208-164.000.

C. Desaga GmbH Nachf. Erich Fecht: *See—*
Vesterberg, Olof, 4,284,491, Cl. 204-299.00R.

C. Reichert Optische Werke, AG: *See—*
Sitte, Hellmuth; Neumann, Klaus; Kleber, Heinrich; and Hassig, Helmut, 4,284,894, Cl. 250-443.000.

Cackley, George W.: *See—*
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,284,182, Cl. 192-4.00A.

Cahalan, Maurice J.: *See—*
Rendell, John S.; and Cahalan, Maurice J., 4,284,606, Cl. 423-6.000.

Campbell, Michael D., to Metalfab Industries, Inc. Security locking assembly. 4,284,300, Cl. 292-251.000.

Campbell, William, to International Computers Limited. Integrated circuit package. 4,285,002, Cl. 357-74.000.

Canada, Atomic Energy of, Limited: *See—*
Allan, Colin J.; Shields, Ross B.; Cuttler, Jerry M.; and Lynch, Gerard F., 4,284,893, Cl. 250-390.000.

Canada-Cities Service, Ltd.: *See—*
Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., 4,284,360, Cl. 366-140.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Kuehn, Lorne A., 4,283,798, Cl. 2-426.000.

Canadian Liquid Air Ltd./Air Liquide Canada LTEE.: *See—*
Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, 4,284,510, Cl. 210-614.000.

Canadian Patents & Development Ltd.: *See—*
Capes, C. Edward; Thayer, William L.; Coleman, Richard D.; and Messer, Leonard, 4,284,413, Cl. 44-51.000.
Underhill, Edward W.; Steck, Warren F.; Chisholm, Melvin D.; and Arthur, Alfred P., 4,284,622, Cl. 424-84.000.

Cancio, Leopoldo V.; Miller, Gerald W.; and Wu, Pai-Chuan, to Clopay Corporation. Polyester compositions for gas and moisture barrier materials. 4,284,671, Cl. 428-35.000.

Candor, James T. Electrostatic method and apparatus for treating material. 4,283,862, Cl. 34-1.000.

Cannell, Michael J.; Carr, Slade L., Jr.; Stevens, Howard O.; and Surosky, Harold, to United States of America, Navy. Porous interface stabilized liquid metal current collector. 4,284,918, Cl. 310-178.000.

Canning, Everett J., Jr., to Western Electric Co., Inc. Separation of contaminant material from copper wire and cable. 4,284,428, Cl. 75-64.000.

Canon Kabushiki Kaisha: *See—*
Ando, Yujiro; Shinohara, Yukimasa; and Ohara, Katsunobu, 4,284,697, Cl. 430-53.000.
Ito, Fumio; and Yazaki, Mutsunobu, 4,284,337, Cl. 354-25.000.
Kawamura, Masaharu; Shigeta, Yoshihiro; Uchidoi, Masanori; Sugiura, Yoji; and Yamamoto, Hiroshi, 4,284,333, Cl. 354-23.00D.
Tanaka, Kazuo, 4,284,331, Cl. 350-427.000.

Capes, C. Edward; Thayer, William L.; Coleman, Richard D.; and Messer, Leonard, to Canadian Patents & Development Ltd.; and Messer, Leonard. In-line method for the beneficiation of coal and the formation of a coal-in-oil combustible fuel therefrom. 4,284,413, Cl. 44-51.000.

Carbonneau, Victor, to Clarostat Mfg. Co., Inc. Potentiometer. 4,284,969, Cl. 338-183.000.

Cardot, Claude: *See—*
Thomas, Luc; and Cardot, Claude, 4,285,044, Cl. 364-721.000.

Carey, Howard M., Jr., to American Safety Razor Company. Dimpled tray package with self-locking feature. 4,284,204, Cl. 220-346.000.

Cargill, Incorporated: *See—*
Bowser, Milford D.; and Vandre, Vallace W., 4,283,946, Cl. 73-864.310.

Carlson, Lewis R.; and Gassman, Dennis C., to Sperry Corporation. Dual mode virtual-to-real address translation mechanism. 4,285,040, Cl. 364-200.000.

Carr, Albert A.; and Farr, Robert A., to Richardson-Merrell Inc. Cinnamoylpiperidinobutyrophenone antipsychotic agents. 4,284,636, Cl. 424-267.000.

Carr, Slade L., Jr.: *See—*
Cannell, Michael J.; Carr, Slade L., Jr.; Stevens, Howard O.; and Surosky, Harold, 4,284,918, Cl. 310-178.000.

Carravetta, James J.; and Robinson, Edward A., to Modine Manufacturing Company. Method of making solder coated tubes. 4,284,669, Cl. 427-357.000.

Carrier Corporation: *See—*
Miller, Charlie D., 4,283,826, Cl. 29-252.000.

Carrier Drysys Limited: *See—*
Bradshaw, Norman F., 4,284,236, Cl. 236-49.000.

Carruthers, John R.; Kaminow, Ivan P.; and Schmidt, Ronald V., to Bell Telephone Laboratories, Incorporated. Fabrication of optical waveguides by indiffusion of metals. 4,284,663, Cl. 427-164.000.

Carson, John R.: *See—*
Anderson, Neal G.; and Carson, John R., 4,284,562, Cl. 260-326.200.

Carson, William W.; and Roe, John S., to Waters Associates, Inc. Heat exchanger for refractometer. 4,284,352, Cl. 356-134.000.

Carstensen, Jes-Ernst; and Nau, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Vehicle with at least three axles. 4,284,156, Cl. 180-24.020.

Carter, Donald F.: *See—*
Kinard, William C.; Carter, Donald F.; and Young, Cecil G., 4,283,818, Cl. 29-76.00R.

Cartridge Actuated Devices, Inc.: *See—*
Stichling, Gerhardt C.; and McPherson, James, 4,283,987, Cl. 89-1.00B.

Carvalko, Joseph R.: *See—*
Kasper, Richard F.; and Carvalko, Joseph R., 4,284,081, Cl. 128-349.00B.

Casasent, David P.; and Psaltis, Demetri, to United States of America, Army. Space variant signal processor. 4,285,048, Cl. 364-822.000.

Cascade Corporation: *See—*
Olson, John E., 4,284,384, Cl. 414-434.000.

Case, Barton C.: *See—*
Tetenbaum, Marvin T.; and Case, Barton C., 4,284,506, Cl. 210-321.400.

Case, Leo L.; and Koltuniak, Michael A., to Elcoat Systems, Inc. Electrocoating apparatus. 4,284,493, Cl. 204-299.0EC.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 4,283,983, Cl. 84-1.190.

Caspers, Karl-Heinz: *See—*
Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, 4,284,041, Cl. 123-193.00H.

Cassella Aktiengesellschaft: *See—*
Schmidt, Frank, 4,284,782, Cl. 546-288.000.

Caswell, Richard L., to Dresser Industries, Inc. Pilot actuated diaphragm valve. 4,284,212, Cl. 222-333.000.

Caterpillar Tractor Co.: *See—*
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,284,182, Cl. 192-4.00A.
Hoefer, Wayne A., 4,284,309, Cl. 303-50.000.
Reinsma, Harold L., 4,284,281, Cl. 277-84.000.

Cederqvist, Gummar, to Rockwool Aktiebolaget. Method for the production of a fibrous mat. 4,284,471, Cl. 162-152.000.

Celotex Corporation, The: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,284,683, Cl. 428-285.000.

Centrilift, Inc.: *See—*
Tijunelis, Donatas; Boyd, Clinton A.; and Vandevier, Joseph E., 4,284,841, Cl. 174-103.000.

Centro Richerche Fiat S.p.A.: *See—*
Gallizio, Gabriele; and Balestrino, Giovanni, 4,283,830, Cl. 29-407.000.

Ceron, Sergio. Folding-door comprised of wooden slats and hinges. 4,284,118, Cl. 160-229.00R.

Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, to Snamprogetti S.p.A. Process for the polymerization of alpha-olefins, catalyst employed in said process and method for the preparation thereof. 4,284,526, Cl. 252-429.00C.

Cessna Aircraft Company, The: *See—*
Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., 4,283,996, Cl. 91-447.000.

Cetrelli, Renato, to Tetra Pak International AB. Packing containers of laminated material having venting means. 4,284,228, Cl. 229-48.00R.

Cetus Corporation: *See—*
Neidleman, Saul L.; Amon, William F., Jr.; and Geigert, John, 4,284,723, Cl. 435-123.000.

CFE Air Cargo, Inc.: *See—*
Davidson, Robert W., 4,284,013, Cl. 108-50.000.

CGEE Alsthom: *See—*
Debaigt, Jean, 4,284,316, Cl. 339-98.000.

Chaiko, Walter M., to Ingersoll-Rand Company. Earth structure stabilizer. 4,284,379, Cl. 411-61.000.

Champion International Corporation: *See—*
Roccaforte, Harry I., 4,284,193, Cl. 206-45.310.
Stillman, Nathan, 4,284,672, Cl. 428-35.000.

Champion Spark Plug Company: *See—*
Kearney, Thomas J., 4,283,999, Cl. 98-115.0SB.

Champlin, Charles L., to Packaging Corporation of America. Carrier and handle. 4,284,195, Cl. 206-427.000.

Chaney, Clarence E., to Arco Polymers, Inc. Moldable blend of interpolymer of rubber, methacrylic acid and styrene with polyurethane. 4,284,734, Cl. 525-92.000.

Chang, Eugene Y. C., to American Cyanamid Co. Acrylate copolymers grafted onto a polar, water-soluble backbone polymer. 4,284,740, Cl. 525-292.000.

Chang, Wei K.: *See—*
Gold, Elijah H.; and Chang, Wei K., 4,284,555, Cl. 260-239.0BB.

Chao, Tai S.: *See—*
Sheets, Jesse E.; Vitchus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., 4,284,402, Cl. 431-9.000.

Chapman, William L.: *See—*
Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., 4,284,350, Cl. 356-28.500.

Charlet, Egbert: *See—*
Preuss, Reinhard; Charlet, Egbert; Finkel, Peter; and Rosenkranz, Hans J., 4,284,621, Cl. 424-59.000.

Charmasson, Henri J. A.: *See—*
Heger, Vernon G.; and Charmasson, Henri J. A., 4,284,985. Cl. 340-572.000.

Chattha, Mohinder S.; and vanOene, Henk, to Ford Motor Company. Oligomeric phosphate/amino composition. 4,284,754, Cl. 528-107.000.

Chay, Dong M.; and Haack, David J., to Du Pont de Nemours, E. I., and Company. Surfactant foams and their use. 4,284,601, Cl. 422-40.000.

Chayka, George A.; and Schneider, Fred J., to Western Electric Co., Inc. Bonding head. 4,284,466, Cl. 156-583.100.

Chemetics International: *See—*
Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, 4,284,469, Cl. 159-28.00R.

Chemische Werke Huels, A.G.: *See—*
Hahn, Karl; and Biethan, Uwe, 4,284,836, Cl. 585-438.000.

Chemplex Company: *See—*
Pullukat, Thomas J.; and Shida, Mitsuzo, 4,284,527, Cl. 252-430.000.

Chen, Catherine S. H.; and Sheppard, Edward W., to Mobil Oil Corporation. Oil recovery by waterflooding employing anionic polymeric surfactants. 4,284,517, Cl. 252-8.55D.

Chenevard, Alexis: *See—*
Kramer, Ulrich; and Chenevard, Alexis, 4,284,187, Cl. 198-435.000.

Cheney Company, Inc., The: *See—*
Krumbeck, Keith, 4,283,803, Cl. 4-496.000.

Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, 4,284,631, Cl. 424-246.000.

Chikugo, Kazuo: *See—*
Ohno, Eiji; and Chikugo, Kazuo, 4,284,431, Cl. 75-212.000.

Chisholm, Melvin D.: *See—*
Underhill, Edward W.; Steck, Warren F.; Chisholm, Melvin D.; and Arthur, Alfred P., 4,284,622, Cl. 424-84.000.

Chisso Corporation: *See—*
Sagara, Fumio; Kawabata, Hiroshi; and Shiiba, Kiyonori, 4,284,793, Cl. 560-78.000.

Chiu, Randolph K.; Stiff, Douglas A.; and Cox, Francis G., to General Motors Corporation. Vehicle mileage interval detector. 4,284,972, Cl. 340-52.00D.

Chmela, Franz, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Fuel injector valve needle lift control arrangement. 4,284,049, Cl. 123-467.000.

Choberka, John M.; and Rex, Donald K., to International Business Machines Corp. Data matrix print head. 4,284,363, Cl. 400-124.000.

Cholvin, Robert L., to Garrett Corporation, The. Turbocharger control. 4,283,912, Cl. 60-602.000.

Christensen, Edwin H., to Quaker Oats Company, The. Matrix, product therewith, and process. 4,284,652, Cl. 426-72.000.

Christian, Donald K. Drop shelf mechanism. 4,284,207, Cl. 221-90.000.

Chrysler Corporation: *See—*
Patchett, David R.; Phipps, Warren J.; and Zaverzence, Harry, 4,284,312, Cl. 339-60.00R.

Chung, Jeremy K.: *See—*
Pratt, George W., Jr.; Poss, Robert; and Chung, Jeremy K., 4,283,799, Cl. 3-1.913.

Chupp, John P.: *See—*
Alt, Gerhard H.; and Chupp, John P., 4,284,564, Cl. 260-333.000.

Ciarico, Anthony J.: *See—*
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,284,084, Cl. 128-748.000.

Ciba-Geigy Aktiengesellschaft: *See—*
Tomka, Ivan, 4,284,709, Cl. 430-222.000.

Ciba-Geigy Corporation: *See—*
Bagga, Madan M., 4,284,574, Cl. 260-348.430.
Berner, Godwin, 4,284,485, Cl. 204-159.150.
Bohner, Beat; and Rempfler, Hermann, 4,284,566, Cl. 260-343.600.
Furrer, Peter; and Beyeler, Harry, 4,284,797, Cl. 562-434.000.
Haug, Theobald, 4,284,752, Cl. 528-68.000.
Lohse, Friedrich; Stockinger, Friedrich; and Eldin, Sameer H., 4,284,755, Cl. 528-111.000.
Martin, Pierre; and Bellus, Daniel, 4,284,821, Cl. 568-381.000.
Tzikas, Athanassios, 4,284,770, Cl. 544-187.000.
Waldmeier, Peter; and Delini-Stula, Aleksandra, 4,284,638, Cl. 424-267.000.
Weis, Claus D., 4,284,828, Cl. 568-637.000.

Clarke, Robert W.: *See—*
Johnston, James J.; and Clarke, Robert W., 4,284,217, Cl. 224-30.00R.

Clarostat Mfg. Co., Inc.: *See—*
Carbonneau, Victor, 4,284,969, Cl. 338-183.000.

Clausing, Challiss I., to Gould Inc. Parallel plane shutter for LK breaker. 4,285,026, Cl. 361-345.000.

Claver, Jorge C., to Cualitas Industrial, S.A. Wall panel clamping apparatus. 4,283,898, Cl. 52-584.000.

Clecak, Nicholas J.; Grant, Barbara D.; and Willson, Carlton G., to International Business Machines Corporation. Lithographic resist composition for a lift-off process. 4,284,706, Cl. 430-191.000.

Clingenpeel, Glenn R., to Storage Technology Corporation. Digital memory providing fixed and variable delays in a TASI system. 4,284,850, Cl. 370-81.000.

Clopay Corporation: *See—*
Cancio, Leopoldo V.; Miller, Gerald W.; and Wu, Pai-Chuan, 4,284,671, Cl. 428-35.000.

Clow, Hugh: *See—*
Burl, Michael; Clow, Hugh; Harrison, Colin G.; and Young, Ian R., 4,284,950, Cl. 324-320.000.

Clymer, Jack W.: *See—*
Plachy, Ivo T.; Clymer, Jack W.; and Pembroke, Richard W., 4,284,250, Cl. 242-68.300.

Coal Industry (Patents) Limited: *See—*
Randell, Arthur A., 4,284,242, Cl. 239-422.000.

Cobb, Raymond F.; and Pelchat, M. Guy, to Harris Corporation. Spread spectrum code tracking loop. 4,285,060, Cl. 375-1.000.

Coflexip: *See—*
Legallasi, Lucien; Planquette, Guy; and Reynard, Remi, 4,284,249, Cl. 242-54.00R.

Cogelia, Nicholas J.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,284,842, Cl. 174-107.000.

Cohen, Howard M.: *See—*
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Cohen, Solomon. Adjustable ladder extender assembly safety attachment. 4,284,172, Cl. 182-204.000.

Cole, Wilbur C., Sr. Endless track support tool. 4,283,828, Cl. 29-256.000.

Coleman, Richard D.: *See—*
Capes, C. Edward; Thayer, William L.; Coleman, Richard D.; and Messer, Leonard, 4,284,413, Cl. 44-51.000.

Collier, David S.; and Muxworthy, Allan S., to Syd W. Collier Company Limited. Carpet cleaning systems. 4,284,127, Cl. 165-35.000.

Collier, John C., to BICC Limited. Electrical terminal crimping apparatus. 4,283,846, Cl. 29-753.000.

Combustion Engineering, Inc.: *See—*
Anthony, Andrew J., 4,284,475, Cl. 176-78.000.

Commissariat a l'Energie Atomique: *See—*
Hulot, Michel; and Prigent, Raymond, 4,284,892, Cl. 250-388.000.
Lemercier, Guy, 4,284,474, Cl. 176-38.000.
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Hodgkin, Jonathan H., 4,284,512, Cl. 210-688.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Thomas, Luc; and Cardot, Claude, 4,285,044, Cl. 364-721.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Sigel, Pierre L.; Delorme, Raymond L.; and Grosjean, Henri, 4,283,845, Cl. 29-739.000.

Compumotion Corporation: *See—*
Welburn, Ross, 4,284,940, Cl. 318-696.000.

Comstock, Lowell R.; and Smith, Percy L., to Union Carbide Corporation. Unsaturated polyester compositions. 4,284,736, Cl. 525-169.000.

Conceptual Factors, Inc.: *See—*
Lutz, William R., 4,284,058, Cl. 126-9.00R.

Condon, Michael E.: *See—*
Ondetti, Miguel A.; and Condon, Michael E., 4,284,779, Cl. 546-189.000.
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Conoco, Inc.: *See—*
Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., 4,284,350, Cl. 356-28.500.
Echtler, J. Paul; and Scandrol, Roy O., 4,283,954, Cl. 73-706.000.
Lancet, Michael S.; and Curran, George P., 4,284,528, Cl. 252-443.000.
Sweany, Glenn A., 4,284,139, Cl. 166-267.000.

Consolidated Papers, Inc.: *See—*
Endrizzi, Gilbert D., 4,284,453, Cl. 156-154.000.

Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., to Conoco, Inc. Laser geophone. 4,284,350, Cl. 356-28.500.

Cooper Industries, Inc.: *See—*
Kilmer, Paul R.; and Bula, Roger M., 4,284,109, Cl. 140-122.000.

Cooper, Terence A.: *See—*
Boyce, Richard J.; and Cooper, Terence A., 4,284,542, Cl. 260-27.00R.

Coose, James P.: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.
Cordiner, Frank S.: *See—*
Sydansk, Robert D.; and Cordiner, Frank S., 4,284,140, Cl. 166-291.000.
Corey, Joseph T., to Permclip Products Corporation. Expansion folder with accordian-pleat backbone. 4,284,227, Cl. 229-1.50R.
Corning Glass Works: *See—*
Wedding, Brent M., 4,284,686, Cl. 428-334.000.
Corominas, Gumersindo P. Machine for making meat patties. 4,283,812, Cl. 17-32.000.
Corry, John: *See—*
Liebman, Israel; Corry, John; and Pro, Richard, 4,284,144, Cl. 169-64.000.
Costantini, Giovanni: *See—*
Genevois, Jean L.; Falohi, Roberto; Costantini, Giovanni; and Presti, Paolo, 4,284,404, Cl. 432-37.000.
Cotic, Dennis J., to General Electric Company. Method for bonding electrode plates in a multicell x-ray detector. 4,283,817, Cl. 29-25.160.
Coulter Systems Corporation: *See—*
Weber, Harold J., 4,284,489, Cl. 204-298.000.
Weber, Harold J., 4,284,490, Cl. 204-298.000.
Courtright, Burr; Olson, Dale E.; and Smolkowski, Alvin H. Water propelled prime mover in agricultural irrigation systems. 4,284,240, Cl. 239-184.000.
Coussement, Marc: *See—*
van der Heyden, Andre; Coussement, Marc; and Van Peteghem, Antoine, 4,284,618, Cl. 423-605.000.
Cox, Francis G.: *See—*
Chiu, Randolph K.; Stiff, Douglas A.; and Cox, Francis G., 4,284,972, Cl. 340-52.00D.
CPC International Inc.: *See—*
Tamuri, Masaki; Kanno, Mitsuo; and Ishii, Yoshiko, 4,284,722, Cl. 435-94.000.
Craig, James P., Jr., to Monsanto Company. Method for making bicomponent filaments. 4,284,598, Cl. 264-171.000.
Craighead, Harold G.; and Howard, Richard E., to Bell Telephone Laboratories, Incorporated. Light-absorbing materials. 4,284,689, Cl. 428-620.000.
Crescent Roofing Company Limited: *See—*
Brill-Edwards, Kenneth O. P., 4,284,065, Cl. 126-432.000.
Cros, Jacques. Method and a covering for heat insulation and protection of a construction. 4,283,888, Cl. 52-3.000.
Cross, John P.; and Britton, George H., Jr., to Milliken Research Corporation. Process for coloring thermosetting resins. 4,284,729, Cl. 521-158.000.
Crow, William D.; and Lewis, John G., to Emerson Electric Co. Low actuating force switch. 4,284,864, Cl. 200-153.00V.
Cualitas Industrial, S.A.: *See—*
Claver, Jorge C., 4,283,898, Cl. 52-584.000.
Culleiton, Charles J.; Das, Subodh K.; and Schoener, Ronald C., to Aluminum Company of America. Chlorination of aluminous materials using preselected solid reducing agents. 4,284,607, Cl. 423-137.000.
Cummins Engine Company, Inc.: *See—*
Kasting, Edward W.; and Glasson, Richard E., 4,284,037, Cl. 123-41.720.
Cunningham, William C.: *See—*
Beyl, Earl L., Jr.; and Cunningham, William C., 4,284,954, Cl. 528-75.000.
Cunnington, Ian J.: *See—*
Evans, Harold R.; and Cunnington, Ian J., 4,284,272, Cl. 272-72.000.
Curran, George P.: *See—*
Lancet, Michael S.; and Curran, George P., 4,284,528, Cl. 252-443.000.
Cuttler, Jerry M.: *See—*
Allan, Colin J.; Shields, Ross B.; Cuttler, Jerry M.; and Lynch, Gerard F., 4,284,893, Cl. 250-390.000.
Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Pan-Canadian Petroleum Limited; Esso Resources Canada Ltd.; Canada-Cities Service, Ltd.; and Gulf Canada Resources Inc. Homogenizer/-subsampler for tar sand process streams. 4,284,360, Cl. 366-140.000.
Dabir, Andre: *See—*
Bolle, Jean; and Dabir, Andre, 4,284,520, Cl. 252-45.000.
Dahl, Ernest A.; and Barry, George H. Battery electrolyte level sensor. 4,284,951, Cl. 324-430.000.
Daiichi Seiyaku Co., Ltd.: *See—*
Ishikawa, Fumiyoshi; and Ashida, Shinichiro, 4,284,773, Cl. 544-247.000.
Daikin Kogyo Co., Ltd.: *See—*
Mori, Shigeru; and Sakitani, Katsumi, 4,285,027, Cl. 361-385.000.
Ohmori, Akira, 4,284,746, Cl. 525-510.000.
Tohzuka, Takashi; and Ohsaka, Yohnosuke, 4,284,822, Cl. 568-399.000.
Daimler-Benz Aktiengesellschaft: *See—*
Happel, Robert, 4,284,043, Cl. 123-299.000.
Springer, Willi, 4,284,042, Cl. 123-198.00F.
Dainippon Ink and Chemicals Inc.: *See—*
Mizuno, Shioji; Enokimoto, Norio; and Oji, Kazuyoshi, 4,284,550, Cl. 260-40.00R.
Dana Corporation: *See—*
Hickey, John L.; and Wuest, Gerald A., 4,283,963, Cl. 74-400.000.
Daniels, Dennis. Line retrieving and dispensing device. 4,283,875, Cl. 43-18.00R.
Daniels, Peter J. L.; and Rane, Dinanath, to Schering Corporation. Process for the preparation of 5-fluoro-5-deoxy and 5-epi-fluoro-5-deoxy-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitols and novel 5-fluoro-5-deoxy and 5-epi-fluoro-5-deoxy derivatives produced thereby. 4,284,764, Cl. 536-10.000.
Danler, Richard W.; and Bilobran, William L. Air conveyor for bottles and bottle preforms. 4,284,370, Cl. 406-86.000.
Danly Machine Corporation: *See—*
Heiberger, Francis E., 4,283,929, Cl. 72-7.000.
Darin, John K.; Partenheimer, Walter; and Figuly, Joseph D., to Standard Oil Company (Indiana). Minimizing oxygenated aromatic compound content of aqueous solution of reclaimed metal oxidation catalyst. 4,284,523, Cl. 252-420.000.
Darsey, Ralph J.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,284,842, Cl. 174-107.000.
Das, Subodh K.: *See—*
Culleiton, Charles J.; Das, Subodh K.; and Schoener, Ronald C., 4,284,607, Cl. 423-137.000.
Dassler, Adolf. Outsole for sport shoes. 4,283,865, Cl. 36-32.00R.
Davidson, Robert W., to CFE Air Cargo, Inc. Pallet coupling apparatus. 4,284,013, Cl. 108-50.000.
Davies, Lyn: *See—*
Hill, Alistair C.; and Davies, Lyn, 4,283,878, Cl. 43-114.000.
Davignon, Paul A.: *See—*
Newcomb, Paul D.; Davignon, Paul A.; and Miller, Harold M., 4,284,399, Cl. 425-410.000.
Davis, D. Lynn. Soil sampling device. 4,284,150, Cl. 175-84.000.
Davis, Dallas R., to Davis Explosive Sources, Inc. Linear explosive charge with constant detonation velocity and synchronous booster charges. 4,284,006, Cl. 102-317.000.
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Davis, Dallas R., 4,284,006, Cl. 102-317.000.
Davis, Leonard C.; Pacala, Theodore; and Sippel, George R., to General Motors Corporation. Regenerator seal. 4,284,658, Cl. 427-34.000.
Dawson, N. Rick. Environmental control system for a multiple room structure. 4,284,126, Cl. 165-11.00A.
De la Rue Giori, S.A.: *See—*
Giori, Gualtiero, 4,283,902, Cl. 53-399.000.
Debaigt, Jean, to CGEE Alsthom. Terminal block. 4,284,316, Cl. 339-98.000.
DeBoer, Roy, Jr.; and Miller, Kenneth G., to Respiratory Care, Inc. Multiple aspirator for nebulizer. 4,284,590, Cl. 261-62.000.
de Concini, Roberto: *See—*
Bellicardi, Francesco; de Concini, Roberto; and Bolelli, Rino, 4,284,039, Cl. 123-463.000.
Degner, Dieter; Barl, Manfred; and Siegel, Hardo, to BASF Aktiengesellschaft. 4-Substituted benzaldehyde-dialkylacetal. 4,284,825, Cl. 568-592.000.
de Graaf, Stephanus A. G.: *See—*
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,284,772, Cl. 544-218.000.
DeJarlais, Edward: *See—*
Marben, Ronald D., 4,284,267, Cl. 269-266.000.
DeJarlais, Ralph: *See—*
Marben, Ronald D., 4,284,267, Cl. 269-266.000.
de Jonge, Cornelis R. H. I.: *See—*
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De Lathauwer, Rene; Van Opstal, Martin; and Dijkstra, Albert J., to Safinco. Process for the directed interesterification of a triglyceride oil or oil mixture. 4,284,578, Cl. 260-410.700.
DeLaurentis, Angelo A.; Zola, Frank G., Jr.; and Specht, Theodore R., to Westinghouse Electric Corp. Method of making an electrical inductive apparatus. 4,283,842, Cl. 29-606.000.
Delfosse, Pierre; and Strauch, Dieter, to Omya S. A. Coating substances with a high concentration of solids, for coated papers. 4,284,546, Cl. 260-29.60R.
DeLiban, Robert; and Lieby, David G., to Barrett Electronics Corporation. Vehicle guidance system employing radio blocking. 4,284,160, Cl. 180-168.000.
Delini-Stula, Aleksandra: *See—*
Waldmeier, Peter; and Delini-Stula, Aleksandra, 4,284,638, Cl. 424-267.000.
Dellinger, Eugene L. Orthodontic appliance method of treatment and manufacture. 4,284,405, Cl. 433-24.000.
Delorme, Raymond L.: *See—*
Sigel, Pierre L.; Delorme, Raymond L.; and Grosjean, Henri, 4,283,845, Cl. 29-739.000.
del Rio, Eddy H., to RCA Corporation. Means to orbit and rotate target wafers supported on planet member. 4,284,033, Cl. 118-730.000.
Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., to BASF Wyandotte Corporation. HR foams made with reactive polyol compositions having improved stability. 4,284,728, Cl. 521-155.000.
Demrick, Carl J., to Herder N.V. Dual wheel caster body structure. 4,283,810, Cl. 16-47.000.
Dengel, Ottmar H.: *See—*
Bowen, Richard E.; Robb, Robert A.; Dengel, Ottmar H.; Gotzmer, Carl; and Pisacane, Frank J., 4,284,617, Cl. 423-504.000.

Denoyelle, Serge; and Noisette, Pierre, to Alsthom-Unelec. Adjustable electromagnetic tripping mechanism for a circuit-breaker. 4,284,968, Cl. 335-176.000.
De Pas, Len: *See*—
Applebaum, Melvin; De Pas, Len; and Little, William C., 4,283,871, Cl. 40-158.00R.
Deppen, Jean-Pierre: *See*—
Aignesberger, Alois; Deppen, Jean-Pierre; and Rosenbauer, Hans-Gunter, 4,284,433, Cl. 106-90.000.
Deres Development Corporation: *See*—
Lipfert, Donald E., 4,283,864, Cl. 36-28.000.
De Simone, Robert S., to Hercules Incorporated. Propene trimer and propene tetramer and use thereof in perfumery. 4,284,814, Cl. 564-253.000.
Detemple, Manfred; and Huebner, Horst, to Schott-Geraete GmbH. Electrode head. 4,284,321, Cl. 339-218.00M.
Detweiler, Charles A.: *See*—
Benjamin, Benjamin C.; and Detweiler, Charles A., 4,284,261, Cl. 251-60.000.
Develop Dr. Eisbein GmbH & Co.: *See*—
Weigele, Reinhold; Pfeil, Wolfgang; and Purr, Horst, 4,284,005, Cl. 101-363.000.
Deventer GmbH & Co.: *See*—
Forster, Arthur, 4,284,464, Cl. 156-510.000.
deVries, Egbert, to Quad Environmental Technologies Corp. Condensation cleaning of particulate laden gases. 4,284,609, Cl. 423-242.000.
de Vries, Jochem J.: *See*—
Engelhardt, Manfred; Reinink, Jan; de Vries, Jochem J.; and Tietjens, Eduard W., 4,283,849, Cl. 30-43.600.
Deyhimy, Ira; Eden, Richard C.; Harris, James S., Jr.; and Bubulac, Lucia O., to Rockwell International Corporation. Buried channel charge coupled device with semi-insulating substrate. 4,285,000, Cl. 357-24.000.
Dickens, Luther I.; and Nanny, William C. Method of manufacturing a composite panel. 4,284,447, Cl. 156-78.000.
Dickinson, Norman L. Pollution-free coal combustion process. 4,284,015, Cl. 110-347.000.
Didier Engineering GmbH: *See*—
Brommel, Walter, 4,284,478, Cl. 202-227.000.
Schulte, Egon, 4,284,479, Cl. 202-248.000.
Wagener, Dietrich; Flockenhaus, Claus; and Meckel, Joachim F., 4,284,476, Cl. 201-39.000.
Diermayer, Werner; and Kutzner, Luitpold. Vent control arrangement for combustion apparatus. 4,284,235, Cl. 236-1.00G.
Dijkstra, Albert J.: *See*—
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Dinges, Frank. Decorative lighting control with a waveform generator. 4,284,926, Cl. 315-312.000.
Disa, Ralph E.: *See*—
Obrochta, Frank T.; and Disa, Ralph E., 4,283,835, Cl. 29-527.600.
Dittburner, Robert C.: *See*—
Hayward, Richard; Bottrill, John; and Dittburner, Robert C., 4,284,854, Cl. 179-84.0VF.
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Divelbiss, Carl D.; and Dock, Mortimer R., 4,284,110, Cl. 141-98.000.
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Morlok, Albrecht; Hacker, Fritz; and Kolling, Peter, 4,284,291, Cl. 280-479.00R.
Dr.-Ing Rudolf Hell GmbH: *See*—
Greve, Helmut, 4,284,996, Cl. 346-140.00R.
Klopsch, Siegfried, 4,285,009, Cl. 358-76.000.
Dodonov, Jury I. Microwave magnetron-type device. 4,284,924, Cl. 315-39.510.
Domek, John A., to Efdyn Corporation. Self-adjusting shock absorber having staged metering. 4,284,177, Cl. 188-280.000.
Don Norton Manufacturing Co., Inc.: *See*—
Norton, Don S., 4,284,095, Cl. 135-21.000.
Donaghy, Robert E.; and Sherman, Anna H., to General Electric Company. Electroless deposition process for zirconium and zirconium alloys. 4,284,660, Cl. 427-57.000.
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Arnett, John F.; and Doorakian, George A., 4,284,573, Cl. 260-348.150.
Dorschner, Terry A.: *See*—
Smith, Irl W.; and Dorschner, Terry A., 4,284,329, Cl. 350-375.000.
Doswald, Paul, to Sandoz Ltd. Monoazo compounds having a 6-(2'-N-alkylanilino--4-chloro-1',3',5'-triazinyl-6'-amino or alkylamino)-1-hydroxy-3-sulfonaphthalene coupling component radical. 4,284,554, Cl. 260-153.000.
Douglass, Paul W.; and Trotta, Robert A., to Gillette Company, The. Razor blade assembly with a removable blade cartridge. 4,283,850, Cl. 30-47.000.
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Arnett, John F.; and Doorakian, George A., 4,284,573, Cl. 260-348.150.
Geiger, Herbert B.; and Smith, David A., 4,284,301, Cl. 294-104.000.
Smith, Layle V., 4,284,372, Cl. 406-106.000.
Dow Corning Corporation: *See*—
Homan, Gary R.; and Lee, Chi-Long, 4,284,539, Cl. 260-18.00S.
Lee, Headie O., 4,284,213, Cl. 222-541.000.
Dowbenko, Rostyslaw: *See*—
Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, 4,284,776, Cl. 544-400.000.
Downey, John. Battery operated personal alarm. 4,284,982, Cl. 340-546.000.
Dowty Meco Limited: *See*—
Taylor, David B., 4,284,192, Cl. 198-813.000.
Doyle, Richard C., to Slater Electric Inc. Electrical wiring connector. 4,284,317, Cl. 339-103.00R.
Doyle, Terrence W.: *See*—
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,284,568, Cl. 260-345.200.
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Caswell, Richard L., 4,284,212, Cl. 222-333.000.
Drews, Hilbert F. P. Driven craft having surface means for increasing propulsion efficiencies. 4,284,302, Cl. 296-1.00S.
Drews, John W. Vehicle safety fender trim. 4,284,328, Cl. 350-97.000.
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Suchowerskyj, Wadym; Werner, Peter; Schnurle, Hans; Mohrle, Werner; and Drews, Urlich, 4,284,050, Cl. 123-483.000.
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Drexler, Jerome; and Bouldin, Eric W., 4,284,716, Cl. 430-510.000.
Dreyer, Klaus; Grewe, Hans; Kolaska, Johannes; and Reiter, Norbert, to Fried Krupp Gesellschaft mit beschrankter Haftung. Compound body. 4,284,687, Cl. 428-336.000.
Dreyfus, Gerard: *See*—
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Drosdziok, Hermann: *See*—
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Drysdale, William H.: *See*—
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DuBois, Chester G.: *See*—
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Dunlap, Terry A.: *See*—
Zobrist, Gerald S.; Dunlap, Terry A.; and Russell, Richard H., 4,283,957, Cl. 73-814.000.
Dunn, Michael D. Greenhouse construction. 4,283,889, Cl. 52-66.000.
Du Pont de Nemours, E. I., and Company: *See*—
Boyce, Richard J.; and Cooper, Terence A., 4,284,542, Cl. 260-27.00R.
Burg, Marion, 4,284,710, Cl. 430-271.000.
Chay, Dong M.; and Haack, David J., 4,284,601, Cl. 422-40.000.
Grant, John W., 4,284,497, Cl. 209-155.000.
Grant, John W.; Kirkland, Joseph J.; and Yau, Wallace W., 4,284,498, Cl. 209-155.000.
Lee, Kyu T., 4,284,777, Cl. 546-90.000.
Dupressoir, Albert, to Thomson-CSF. Common antenna for primary and secondary radar system. 4,284,991, Cl. 343-725.000.
Durant, Graham J.; Emmett, John C.; Ganellin, Charon R.; and Prain, Hunter D., to Smith Kline & French Laboratories Limited. Ethylene derivatives. 4,284,640, Cl. 424-270.000.
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Durrer, Jorg; and Mayer, Cornelius, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for eliminating external weather effects from the objective lens system of an aiming periscope installed at an armed vehicle. 4,284,326, Cl. 350-63.000.
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Dusseau, Charles H. V.: *See*—
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Duttlinger, Jean, to Wolber. Method and device for repairing tubeless tubular tires for bicycles. 4,284,450, Cl. 156-97.000.
Dycem Limited: *See*—
Tidmarsh, James N.; and Swift, Gerald N., 4,284,681, Cl. 428-246.000.
Dyment, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., to Northern Telecom Limited. Electro-optic devices. 4,284,884, Cl. 250-205.000.

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Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,284,732, Cl. 252-609.000.

Dynasciences Corporation: *See*—
Fennel, Robert H., III; and McKinney, Robert W., 4,284,725, Cl. 435-301.000.

E M I Limited: *See*—
Burl, Michael; Clow, Hugh; Harrison, Colin G.; and Young, Ian R., 4,284,950, Cl. 324-320.000.

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Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,284,624, Cl. 424-177.000.
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Ondetti, Miguel A.; and Condon, Michael E., 4,284,780, Cl. 546-189.000.
Petrillo, Edward W., Jr.; and Ondetti, Miguel A., 4,284,561, Cl. 260-326.200.

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Schluter, Jurgen, 4,284,873, Cl. 219-136.000.

Eagle, Joseph, to Ortner Freight Car Company. Restraint assembly for the hopper door actuator of a rapid discharging railroad hopper car. 4,284,011, Cl. 105-310.000.

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Berwick, Martin A.; and Riecke, Edgar E., 4,284,699, Cl. 430-96.000.
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Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,284,705, Cl. 430-159.000.

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Kalns, Ilmars, 4,283,968, Cl. 74-701.000.

Ebara Corp.: *See*—
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.

Ebert, Michael: *See*—
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Edmonds, Byron P.; and Porter, Selby W., to PPG Industries Canada Ltd. Apparatus and method of mining subterranean rubble piles. 4,284,306, Cl. 299-5.000.

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Bellicardi, Francesco; de Concini, Roberto; and Bolelli, Rino, 4,284,039, Cl. 123-463.000.

Edward, Robert M., Jr., to JB Development Corporation. Dial gauge mounting apparatus. 4,283,939, Cl. 73-81.000.

Edwards, Kenneth M., to United States of America, Air Force. Tail carriage of stores. 4,283,988, Cl. 89-1.50R.

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Domek, John A., 4,284,177, Cl. 188-280.000.

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Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiro; and Egawa, Mitsuo, 4,284,637, Cl. 424-267.000.

Eguchi, Seiji: *See*—
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,285,038, Cl. 364-200.000.

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Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,284,642, Cl. 424-273.00R.

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Ehret, Robert J., to Beckman Instruments, Inc. Overspeed shutdown system for centrifuge apparatus. 4,284,931, Cl. 318-318.000.

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Radl, Bruce M., 4,284,994, Cl. 346-108.000.

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Zukowski, Edward A., 4,284,738, Cl. 525-247.000.
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Case, Leo L.; and Koltuniak, Michael A., 4,284,493, Cl. 204-299.0EC.

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Lohse, Friedrich; Stockinger, Friedrich; and Eldin, Sameer H., 4,284,755, Cl. 528-111.000.

Electric Machinery Mfg. Company: *See*—
Rowe, Denton C., 4,284,943, Cl. 318-806.000.

Electromedics, Inc.: *See*—
Prosky, Howard S., 4,283,921, Cl. 62-126.000.

Electronic Research Assoc., Inc.: *See*—
Kozlow, Ronald R.; and Grieg, Donald D., 4,284,167, Cl. 181-172.000.

Elger, Walter: *See*—
Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, 4,284,646, Cl. 424-305.000.

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Zimmerman, Dennis M., 4,284,635, Cl. 424-267.000.

Elias, Jiri. Heating installation having a radiation- and convection floor heater. 4,284,130, Cl. 165-53.000.

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Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.

Eltra Corporation: *See*—
Keller, James M., 4,284,322, Cl. 339-223.00S.

Emerson Electric Co.: *See*—
Crow, William D.; and Lewis, John G., 4,284,864, Cl. 200-153.00V.
Freund, William R., Jr.; and Grebe, John C., Jr., 4,283,958, Cl. 73-861.120.

EMI Limited: *See*—
Young, Ian R., 4,284,948, Cl. 324-309.000.

EMI-Varian Limited: *See*—
Perring, Dudley; Smith, Michael J.; and Randall, John P., 4,284,922, Cl. 315-5.390.

Emmett, John C.: *See*—
Durant, Graham J.; Emmett, John C.; Ganellin, Charon R.; and Prain, Hunter D., 4,284,640, Cl. 424-270.000.

EMP AG: *See*—
Hess, Fritz, 4,284,225, Cl. 228-180.00R.

Emson Research, Inc.: *See*—
Meshberg, Emil, 4,284,211, Cl. 222-182.000.

Endrizzi, Gilbert D., to Consolidated Papers, Inc. Method of imparting color highlights or shadows to a textured decorative laminate. 4,284,453, Cl. 156-154.000.

Engelhard Minerals & Chemicals Corporation: *See*—
Bartholic, David B.; and Byrne, John W., 4,284,494, Cl. 208-164.000.

Engelhardt, Manfred; Reinink, Jan; de Vries, Jochem J.; and Tietjens, Eduard W., to U.S. Philips Corporation. Cutting unit for a dry-shaving apparatus. 4,283,849, Cl. 30-43.600.

Engelsmann, Dieter: *See*—
Schroder, Rolf; Engelsmann, Dieter; Lermann, Peter; and Spinnler, Rainer, 4,284,342, Cl. 354-60.00E.

Engineering Enterprises, Inc.: *See*—
Fox, Fred K., 4,284,149, Cl. 175-40.000.

England, John R., to Inco Limited. Non-rotating spring loaded stabilizer. 4,284,154, Cl. 175-325.000.

Engle, Carl E.; and Moldenhauer, Don, to Hydro Ag-Tech Inc. Honey pit fertilization system. 4,284,246, Cl. 241-222.000.

Enokimoto, Norio: *See*—
Mizuno, Shioji; Enokimoto, Norio; and Oji, Kazuyoshi, 4,284,550, Cl. 260-40.00R.

Enomoto, Takamichi: *See*—
Kazami, Takeo; Enomoto, Takamichi; Kato, Tatuya; and Fukagai, Toshio, 4,284,698, Cl. 430-59.000.

Enterprise d'Equipements Mecaniques et Hydrauliques: *See*—
Tuson, Samuel; and Loire, Rene, 4,284,367, Cl. 405-202.000.

Envirotech Corporation: *See*—
Reese, Robert O.; Wieber, Karl R.; and Sholly, James A., 4,284,417, Cl. 55-2.000.

Epper, Wolfgang; and Graf, Rupprecht, to Klockner-Humboldt-Deutz AG. Method and apparatus for dynamic concentration of a suspension. 4,283,938, Cl. 73-59.000.

Erb, Edgar M.: *See*—
Oxenreider, Terry; Duesterhoeft, Donald A.; and Erb, Edgar M., 4,284,122, Cl. 164-98.000.

Eriksson, Erik F. Apparatus for defibrating and conditioning nonflowable cellulosic material. 4,284,247, Cl. 241-260.100.

Ernst, Horst M.: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.

Ernst Leitz Wetzlar GmbH: *See*—
Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, 4,284,327, Cl. 350-87.000.
Magel, Rolf, 4,284,334, Cl. 354-24.000.

Esposito, Patsy. Telescoping handle for a small heavy duty hand truck. 4,284,287, Cl. 280-47.37R.

Essery, John M.: *See*—
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,284,568, Cl. 260-345.200.

Essex Group, Inc.: *See*—
Maier, Thomas A., 4,284,045, Cl. 123-416.000.

Esso Resources Canada Ltd.: *See*—
Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., 4,284,360, Cl. 366-140.000.

Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., to United States of America, Navy. Excimer-pumped four level blue-green solid state laser. 4,284,962, Cl. 331-94.50F.

Ettinger, Donald H., to USM Corporation. Stud welding with fluid shield. 4,284,870, Cl. 219-99.000.

Etzold, Roland. Method and apparatus for flattening wood based panels. 4,284,676, Cl. 428-167.000.

Eustace, Daniel J.: *See*—
Rao, Bhaskara M. L.; Eustace, Daniel J.; and Farcasiu, Dan, 4,284,692, Cl. 429-194.000.

Evans, Albert B., Jr.: *See*—
Beno, Lawrence A.; Harrell, John T.; Evans, Albert B., Jr.; and Gaudig, Jay R., 4,284,955, Cl. 328-111.000.
Evans, Geoffrey L.; and Gordon, Stuart, to Imperial Metal Industries (Kynoch) Limited. Combustion inhibitors. 4,284,592, Cl. 264-3.00R.
Evans, Harold R.; and Cunnington, Ian J., to Tekron Licensing B.V. Exercise machines. 4,284,272, Cl. 272-72.000.
Evans, Sara M. Fire resistant identification device. 4,284,296, Cl. 283-7.000.
Eveson, Geoffrey F.; and Scruby, Alan W., to Laporte Industries Limited. Methods of containing fluids deleterious to the container. 4,284,879, Cl. 219-383.000.
Excellon Industries: *See*—
Yassemi, Mark, 4,284,917, Cl. 310-89.000.
Exxon Research & Engineering Co.: *See*—
Eakman, James M.; and Marshall, Harry A., 4,284,423, Cl. 62-28.000.
Nahas, Nicholas C., 4,284,416, Cl. 48-197.00R.
Rao, Bhaskara M. L.; Eustace, Daniel J.; and Farcasiu, Dan, 4,284,692, Cl. 429-194.000.
Rello, Michael J., 4,284,364, Cl. 400-234.000.
Shaub, Harold; and Pecoraro, Joseph M., 4,283,940, Cl. 73-116.000.
Fabrica de Aparatos de Aire Acondicionado: *See*—
Bassotti, Armando, 4,283,916, Cl. 62-5.000.
Fahey, Darryl R.: *See*—
Knudsen, Ronald D.; and Fahey, Darryl R., 4,284,830, Cl. 568-779.000.
Fahey, Robert J.: *See*—
Anderson, Richard W.; Fahey, Robert J.; McClellan, William R.; and Schlener, J. Edward, 4,284,849, Cl. 179-5.00R.
Fahmy, Mohamed A., to Mobil Oil Corporation. O-aryl S-branched alkyl alkylphosphonodithioate insecticides and nematocides. 4,284,626, Cl. 424-222.000.
Falohi, Roberto: *See*—
Genevois, Jean L.; Falohi, Roberto; Costantini, Giovanni; and Presti, Paolo, 4,284,404, Cl. 432-37.000.
Famularo, Dominick S. Drums. 4,283,985, Cl. 84-411.00R.
Farcasiu, Dan: *See*—
Rao, Bhaskara M. L.; Eustace, Daniel J.; and Farcasiu, Dan, 4,284,692, Cl. 429-194.000.
Farr, Robert A.: *See*—
Carr, Albert A.; and Farr, Robert A., 4,284,636, Cl. 424-267.000.
Faulin, Antonio. Ski fastener structure. 4,284,292, Cl. 280-618.000.
Faulkner, Alfred H. Capture system for an electronic musical instrument. 4,283,984, Cl. 84-1.240.
Fava, Ronald A., to Arco Polymers, Inc. Polyphenylene oxide blend with rubber-maleimide-styrene copolymer. 4,284,735, Cl. 525-93.000.
Fayez, Abraham: *See*—
Subera, Elmer J.; Steelman, Melvin W.; and Fayez, Abraham, 4,283,922, Cl. 62-256.000.
Fayolle, Bernard, to Rhone Poulenc Industries. Thermotropic aromatic copolyesters and processes for their preparation. 4,284,757, Cl. 528-191.000.
Fazzini, Daniel B. Cutting tool. 4,283,853, Cl. 30-265.000.
Feldstein, Nathan. Process for metal deposition of a non-conductor substrate. 4,284,666, Cl. 427-304.000.
Felkel, Gerfried; and Klann, Joerg, to Siemens Aktiengesellschaft. High voltage stable optical coupler. 4,284,898, Cl. 250-551.000.
Fennel, Robert H., III; and McKinney, Robert W., to Dynasciences Corporation. Virus titration and identification system. 4,284,725, Cl. 435-301.000.
Ferland, Omer. Industrial vacuum cleaner. 4,284,422, Cl. 55-300.000.
Ferris, Donald L., to United Technologies Corp. Blade fold restraint system. 4,284,387, Cl. 416-134.00A.
Ferro Corporation: *See*—
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,284,521, Cl. 252-62.3BT.
Ferrofluidics Corporation: *See*—
Pierrat, Michel A., 4,284,605, Cl. 422-249.000.
Ferwerda, Jerry J.: *See*—
Thissen, Christopher P.; Ferwerda, Jerry J.; Tweet, Milford J.; and Hatfield, Ronald D., 4,284,396, Cl. 425-342.100.
Fiat-Allis Macchine Movimento Terra S.p.A.: *See*—
Grattapaglia, Giorgio, 4,283,964, Cl. 74-471.0XY.
Fiber Associates, Inc.: *See*—
Geyer, Charles J., Jr.; and White, Ben E., 4,284,765, Cl. 536-60.000.
Figuly, Joseph D.: *See*—
Darin, John K.; Partenheimer, Walter; and Figuly, Joseph D., 4,284,523, Cl. 252-420.000.
Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of acyl cyanides. 4,284,584, Cl. 260-545.00R.
Findeisen, Kurt: *See*—
Helling, Gunter; Krafft, Werner; Findeisen, Kurt; and Himmelmann, Wolfgang, 4,284,708, Cl. 430-216.000.
Wegner, Christian; Findeisen, Kurt; and Weider, Franz, 4,284,544, Cl. 260-29.2TN.
Fink, Joel H., to United States of America, Energy. Neutral beam monitoring. 4,284,952, Cl. 324-464.000.
Finkel, Peter: *See*—
Preuss, Reinhard; Charlet, Egbert; Finkel, Peter; and Rosenkranz, Hans J., 4,284,621, Cl. 424-59.000.
Fischer, Bruno, to International Standard Electric Corporation. Method of manufacturing luminescent screens for color-picture tubes with two exposures. 4,284,695, Cl. 430-24.000.
Fischer, Rolf; and Weitz, Hans-Martin, to BASF Aktiengesellschaft. Preparation of 4-acyloxy-2-methyl-crotonaldehydes. 4,284,796, Cl. 560-262.000.
Fisher, Charles B.; and Fisher, Sidney T. Waveform correction by sampling. 4,285,058, Cl. 370-119.000.
Fisher, Sidney T.: *See*—
Fisher, Charles B.; and Fisher, Sidney T., 4,285,058, Cl. 370-119.000.
Fishfader, Stanley S. Load measuring device. 4,283,942, Cl. 73-862.650.
Fishgal, Semyon I. Machine lubrication system. 4,284,245, Cl. 241-40.000.
Fisons Limited: *See*—
Martin, Donald M.; and Rowe, Peter A., 4,284,613, Cl. 423-310.000.
Fjeldsa, Oyvind. Peat paper and a method for its manufacture. 4,283,880, Cl. 47-56.000.
Flake, Duane W. Method and apparatus for forming a studless wall system. 4,283,893, Cl. 52-241.000.
Flanders, Thomas E.; and Moore, Herbert E., to General Electric Company. Coding system for simultaneously signaling selected ones of a plurality of devices. 4,284,979, Cl. 340-359.000.
Flatau, Alison, to American Cyanamid Company. Package for a multiple of sterile sutures with or without needles attached. 4,284,194, Cl. 206-63.300.
Fleming, James C.; Manthey, Joseph W.; and Brongo, Ralph T., to Eastman Kodak Company. Photographic elements with incorporated hydrogen source photoreductant and tetrazolium salt. 4,284,704, Cl. 430-154.000.
Fletcher, Herbert E. Polyurethane gripping material. 4,284,275, Cl. 273-75.000.
Fliri, Anton: *See*—
Hohenlohe-Oehringen, Kraft; and Fliri, Anton, 4,284,788, Cl. 548-303.000.
Flockenhaus, Claus: *See*—
Wagener, Dietrich; Flockenhaus, Claus; and Meckel, Joachim F., 4,284,476, Cl. 201-39.000.
Flowers, Thad: *See*—
Keller, Alex J.; Flowers, Thad; Williams, Joseph R.; and Patel, Navinchandra K., 4,283,909, Cl. 57-306.000.
Flynn, Richard T.: *See*—
Kindell, Jerry L.; and Flynn, Richard T., 4,285,035, Cl. 364-200.000.
FMC Corporation: *See*—
Albright, Charles D., 4,284,368, Cl. 405-291.000.
Scudder, Roy, 4,283,906, Cl. 56-330.000.
Folser, Karl: *See*—
Theurer, Josef; and Folser, Karl, 4,284,009, Cl. 104-7.00R.
Ford Aerospace & Communications Corp.: *See*—
Koehler, Charles W.; and Van Ommering, Gerrit, 4,284,690, Cl. 429-26.000.
Stonier, Roger A.; and Hayes, Richard A., 4,284,457, Cl. 156-237.000.
Ford, David M.; and Setzer, Gary, to Pneumafil Corporation. Method and apparatus for coiler head cleaning. 4,283,814, Cl. 19-159.00R.
Ford Motor Company: *See*—
Chattha, Mohinder S.; and vanOene, Henk, 4,284,754, Cl. 528-107.000.
Gable, Melvin G.; and Sherman, Richard H., 4,284,976, Cl. 340-147.00R.
Leonard, Allan S., 4,284,096, Cl. 137-48.000.
Woodward, Gary F., 4,284,882, Cl. 235-96.000.
Forenade Fabriksverken: *See*—
Arnell, Claes G.; and Olsson, Erik G., 4,284,007, Cl. 102-477.000.
Forster, Arthur, to Deventer GmbH & Co. Apparatus for making corner joints of sealing profiles for windows, doors or the like. 4,284,464, Cl. 156-510.000.
Forster, Franz H., to Linde Aktiengesellschaft. Spring return mechanism for axial piston machines. 4,283,962, Cl. 74-42.000.
Forster, Hilmar; and Ksienzyk, Klaus, to Scharfenbergkupplung GmbH. Mechanical central buffer coupling for rail vehicles. 4,284,311, Cl. 339-10.000.
Forster, Lloyd N.: *See*—
Lowry, Elliot G.; and Forster, Lloyd N., 4,284,971, Cl. 340-52.00R.
Fotin, Vladilen P.: *See*—
Iosifian, Andronik G.; Fotin, Vladilen P.; Bondaletov, Vladimir N.; Lapshin, Evgeny I.; Ostrovsky, Alexandr S.; and Savchenko, Alexandr I., 4,284,927, Cl. 315-340.000.
Fowler, Albert L.; Henderson, Alan G.; Stevenson, Alastair K.; and Walker, David M., to Hughes Microelectronics Ltd. Position sensing transducer. 4,284,990, Cl. 340-870.320.
Fowler, James C.: *See*—
Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., 4,284,350, Cl. 356-28.500.
Fox, Derek J., to S. C. Johnson & Son, Inc. Method for spray cleaning painted surfaces. 4,284,435, Cl. 134-2.000.
Fox, Fred K., to Engineering Enterprises, Inc. Well drilling tool. 4,284,149, Cl. 175-40.000.
Franks, Neal E.; and Varga, Julianna K., to Akzona Incorporated. Composition and process for making precipitated nylon-polyvinyl alcohol biconstituent composition. 4,284,545, Cl. 260-29.6NR.
Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Folser, Karl, 4,284,009, Cl. 104-7.00R.
Freund, William R., Jr.; and Grebe, John C., Jr., to Emerson Electric Co. Magnetic flowmeter having automatic ranging. 4,283,958, Cl. 73-861.120.

Fricker, Siegfried; and Reinkensmeier, Horst, to Fricker, Siegfried. Tie anchor for sandwich panels of reinforced concrete. 4,283,896, Cl. 52-410.000.

Friebe, Walter-Gunar; Thiel, Max; Kampe, Wolfgang; Wilhelms, Otto-Henning; and Roesch, Androniki, to Boehringer Mannheim GmbH. Derivatives of xanthine. 4,284,633, Cl. 424-253.000.

Fried Krupp Gesellschaft mit beschrankter Haftung: *See*—
Dreyer, Klaus; Grewe, Hans; Kolaska, Johannes; and Reiter, Norbert, 4,284,687, Cl. 428-336.000.

Friedlander, Charles B.: *See*—
Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, 4,284,776, Cl. 544-400.000.

Frimmel, Horst: *See*—
Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, 4,284,327, Cl. 350-87.000.

Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Plempel, Manfred, 4,284,639, Cl. 424-269.000.

Frosch, Robert A.: *See*—
Tschirch, Richard P.; Sidman, Kenneth R.; and Frosch, Robert A., 4,284,682, Cl. 428-263.000.

Frosch, Robert A. Administrator or the National Aeronautics and Space Adminstration, with respect to an invention of Anne K. St. Clair, Larry T. Taylor, Terry L. St. Clair: *See*—
St. Clair, Anne K.; Taylor, Larry T.; St. Clair, Terry L.; and Frosch, Robert A. Administrator or the National Aeronautics and Space Adminstration, with respect to an invention of Anne K. St. Clair, Larry T. Taylor, Terry L. St. Clair, 4,284,461, Cl. 156-331.500.

Frost, Edward G. Switched network telephone subscriber distribution system. 4,284,848, Cl. 179-2.0EB.

Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, to Bayer Aktiengesellschaft. Combating arthropods with novel fluorine-containing phenylacetic acid esters. 4,284,643, Cl. 424-282.000.

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Fuji Electric Co., Ltd.: *See*—
Hayashi, Takaaki, 4,284,093, Cl. 133-4.00A.
Onodera, Keiichi; and Yamaura, Hiroshi, 4,284,916, Cl. 310-70.00R.

Fuji Photo Film Co., Ltd.: *See*—
Inoue, Eiichi; and Nakayama, Takao, 4,284,703, Cl. 430-142.000.
Kato, Hisatoyo; Matsumoto, Seiji; and Miyahara, Junji, 4,284,889, Cl. 250-355.000.
Kudo, Hisashi, 4,284,357, Cl. 356-431.000.
Ogawa, Junkichi; Tanaka, Mitsugu; and Yamada, Minoru, 4,284,714, Cl. 430-364.000.
Ohara, Yuji; and Ohnishi, Masahiro, 4,285,012, Cl. 358-293.000.
Sato, Masamichi; and Fujii, Itsuo, 4,284,713, Cl. 430-323.000.
Sekine, Jiro, 4,284,332, Cl. 352-208.000.
Toya, Ichizo; and Fuseya, Yoshiharu, 4,284,717, Cl. 430-567.000.

Fujii, Itsuo: *See*—
Sato, Masamichi; and Fujii, Itsuo, 4,284,713, Cl. 430-323.000.

Fujioka, Yoshiki: *See*—
Kawada, Shigeki; Fujioka, Yoshiki; and Ohta, Naoto, 4,284,932, Cl. 318-338.000.
Kawada, Shigeki; Fujioka, Yoshiki; Ohta, Naoto; and Koiwai, Yutaka, 4,284,939, Cl. 318-453.000.

Fujisaki, Hitoshi; Onodera, Hideo; and Toyomura, Yasuhiro, to Hitachi Denshi K.K. Switching circuits for differential amplifiers. 4,284,912, Cl. 307-255.000.

Fujisawa, Koiti: *See*—
Sato, Hiroshi; Fujisawa, Koiti; Tojima, Hideto; and Yasui, Seimei, 4,284,818, Cl. 568-323.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Satu, Yoshinari, 4,284,634, Cl. 424-266.000.
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, 4,284,631, Cl. 424-246.000.

Fujisawa, Yoshiaki: *See*—
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Fukami, Harukazu: *See*—
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiro; and Egawa, Mitsuo, 4,284,637, Cl. 424-267.000.

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Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, 4,284,887, Cl. 250-272.000.

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Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.

Fukumoto, Teruhisa: *See*—
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Fukushima, Ichiro: *See*—
Namiki, Ryoichi; Higashi, Yuichiro; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, 4,284,875, Cl. 219-216.000.

Fukutome, Akira: *See*—
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Furrer, Peter; and Beyeler, Harry, to Ciba-Geigy Corporation. Process for separating mixtures of 3- and 4-nitrophthalic acid. 4,284,797, Cl. 562-434.000.

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Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, 4,284,486, Cl. 204-195.00S.

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Toya, Ichizo; and Fuseya, Yoshiharu, 4,284,717, Cl. 430-567.000.

Futter, Friedrich P. Self-adjusting rotary chuck. 4,284,285, Cl. 279-62.000.

Gable, Melvin G.; and Sherman, Richard H., to Ford Motor Company. Interface between communication channel segments. 4,284,976, Cl. 340-147.00R.

Gach, Peter P.: *See*—
Bush, Randall G.; and Gach, Peter P., 4,284,200, Cl. 215-215.000.

GAF Corporation: *See*—
Bondoc, Alfredo A., 4,284,470, Cl. 162-123.000.

Gaicki, Stanley, to Motorola, Inc. Lower cost semiconductor package with good thermal properties. 4,285,003, Cl. 357-81.000.

Gajewski, James M.: *See*—
Leikhim, John W.; Gajewski, James M.; and Kuzel, Maryann, 4,284,532, Cl. 252-528.000.

Gale, George A. Port devices for bass-reflex speaker enclosures. 4,284,166, Cl. 181-156.000.

Gale, Glen R.: *See*—
Meischen, Sandra J.; Gale, Glen R.; and Naff, Marion B., 4,284,579, Cl. 260-429.00R.

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Gallizio, Gabriele; and Balestrino, Giovanni, to Centro Richerche Fiat S.p.A. Method and apparatus of monitoring the screwing home of a threaded element by a power tool. 4,283,830, Cl. 29-407.000.

Gammill, Ronald B., to Upjohn Company, The. Antiatherosclerotic furochromones. 4,284,569, Cl. 260-345.200.

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Ganellin, Charon R.: *See*—
Durant, Graham J.; Emmett, John C.; Ganellin, Charon R.; and Prain, Hunter D., 4,284,640, Cl. 424-270.000.

Gans, Michael J., to Bell Telephone Laboratories, Incorporated. Wide scan quasi-optical frequency diplexer. 4,284,992, Cl. 343-909.000.

Ganser, Josef: *See*—
Borowski, Kurt; and Ganser, Josef, 4,284,339, Cl. 354-38.000.

Gansewig, Otto H. J. Apparatus for raking and levelling sand in a pit. 4,284,273, Cl. 272-101.000.

Garber Company, The: *See*—
Meyers, George, 4,284,197, Cl. 206-626.000.

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Hill, Lawrence; Garbis, Dennis; and Heller, Robert, 4,284,867, Cl. 219-10.49R.

Garrett Corporation, The: *See*—
Cholvin, Robert L., 4,283,912, Cl. 60-602.000.

Garrett, Robert A.; Silva, John; and Allen, Craig R., to United States of America, Navy. Ambulator control circuitry. 4,284,929, Cl. 318-51.000.

Gassman, Dennis C.: *See*—
Carlson, Lewis R.; and Gassman, Dennis C., 4,285,040, Cl. 364-200.000.

Gaudig, Jay R.: *See*—
Beno, Lawrence A.; Harrell, John T.; Evans, Albert B., Jr.; and Gaudig, Jay R., 4,284,955, Cl. 328-111.000.

Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E. Percussion mechanism. 4,283,991, Cl. 91-299.000.

Gaus, Harry, to Braun Aktiengesellschaft. Loudspeaker enclosure. 4,284,168, Cl. 181-199.000.

Gauthier, Robert O., to American Hospital Supply Corporation. Patient support table with adjustable stirrups. 4,284,268, Cl. 269-328.000.

Gebrueder Buehler AG: *See*—
Gsponer, Arnold; and Schnitzer, Hans, 4,284,369, Cl. 406-52.000.
Geiger, Friedrich, to Kleindienst GmbH & Co. Kg. Ironing mangle with pneumatically pressurizable roller covering. 4,283,868, Cl. 38-56.000.
Geiger, Herbert B.; and Smith, David A., to Dow Chemical Company, The. Bag transfer device. 4,284,301, Cl. 294-104.000.
Geiger, Jozsef: *See*—
Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef, 4,284,436, Cl. 148-2.000.
Geigert, John: *See*—
Neidleman, Saul L.; Amon, William F., Jr.; and Geigert, John, 4,284,723, Cl. 435-123.000.
Gema AG: *See*—
Moos, Kurt; and Buschor, Karl, 4,284,032, Cl. 118-684.000.
Gemmel, Goran; and Aslund, Christer, to Granges Myby AB. Process for the production of sheet and strip from ferritic, stabilized, stainless chromium-molybdenum-nickel steels. 4,284,439, Cl. 148-12.0EA.
General Atomic Company: *See*—
Harris, Arthur M., 4,284,134, Cl. 165-163.000.
General Battery Corporation: *See*—
Oxenreider, Terry; Duesterhoeft, Donald A.; and Erb, Edgar M., 4,284,122, Cl. 164-98.000.
General Electric Company: *See*—
Bailey, Ronald B.; and Stitt, Thomas D., 4,284,936, Cl. 318-381.000.
Bailey, Ronald B., 4,284,938, Cl. 318-432.000.
Cotic, Dennis J., 4,283,817, Cl. 29-25.160.
Donaghy, Robert E.; and Sherman, Anna H., 4,284,660, Cl. 427-57.000.
Flanders, Thomas E.; and Moore, Herbert E., 4,284,979, Cl. 340-359.000.
Henry, Michael F., 4,284,430, Cl. 75-170.000.
Hooke, John W., 4,283,843, Cl. 29-623.100.
Horton, Richard H.; and Zdeb, John J., 4,283,887, Cl. 52-2.000.
Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., 4,283,822, Cl. 29-156.80H.
Nelson, Donald A., 4,284,920, Cl. 310-217.000.
Olson, Daniel R.; Orkin, Ona V.; and Webb, Karen K., 4,284,685, Cl. 428-331.000.
Pomares, Raul J.; Ruiz, Carl P.; and Simpson, Douglas H., 4,284,472, Cl. 176-16.000.
Rauch, Harry W., Sr., 4,284,664, Cl. 427-180.000.
Stein, Edward I., 4,284,597, Cl. 264-130.000.
Stone, Aidan M., 4,283,928, Cl. 68-23.700.
Stonestrom, James P., 4,284,896, Cl. 250-445.00T.
Tiemann, Jerome J., 4,284,908, Cl. 307-221.00D.
Tiemann, Jerome J., 4,284,909, Cl. 307-221.00D.
Vakil, Himanshu B., 4,283,919, Cl. 62-114.000.
Vogelsong, Thomas L.; and Tiemann, Jerome J., 4,284,907, Cl. 307-221.00D.
White, Emery A., 4,284,843, Cl. 178-69.00G.
General Instrument Corporation: *See*—
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General Motors Corporation: *See*—
Chiu, Randolph K.; Stiff, Douglas A.; and Cox, Francis G., 4,284,972, Cl. 340-52.00D.
Davis, Leonard C.; Pacala, Theodore; and Sippel, George R., 4,284,658, Cl. 427-34.000.
March, Anthony; and Horton, Thomas E., 4,284,935, Cl. 318-280.000.
Regueiro, William R., 4,284,941, Cl. 318-587.000.
Vukovich, William J., 4,283,970, Cl. 74-866.000.
General Signal Corporation: *See*—
Young, John E. G.; and Schneckenburger, Donald R., 4,284,389, Cl. 417-218.000.
General Technology Applications, Inc.: *See*—
Weitzen, William; and Trippe, Jerry C., 4,284,511, Cl. 210-661.000.
Genevois, Jean L.; Falohi, Roberto; Costantini, Giovanni; and Presti, Paolo. Continuous ring baking furnaces of the Hoffmann type. 4,284,404, Cl. 432-37.000.
George, David B.; and Bailey, Leonard K., to Kennecott Copper Corporation. Self cleaning, steam cooled, gas sample probe. 4,283,947, Cl. 73-863.110.
George, Peter J. Improved knuckle hinge. 4,283,811, Cl. 16-128.00R.
Georgia Tech Research Institute: *See*—
Leach, W. Marshall, Jr.; and Schafer, Ronald W., 4,284,860, Cl. 179-175.10A.
Gerzberg, Levy; and Meindl, James D., to Leland Stanford Jr. University, Board of Trustees of. Monolithic distributed resistor-capacitor device and circuit utilizing polycrystalline semiconductor material. 4,285,001, Cl. 357-51.000.
Gesellschaft fur Biotechnologische Forschung: *See*—
Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, 4,284,509, Cl. 210-610.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Weirich, Walter, 4,284,101, Cl. 137-538.000.
Geyer, Charles J., Jr.; and White, Ben E., to Fiber Associates, Inc. Automatic aging analyzer using a motor having a constant torque. 4,284,765, Cl. 536-60.000.
Gianni, Sebastian J.; and Seeley, William M., to Dunham-Bush, Inc. Concentric tube heat exchange assembly with improved internal fin structure. 4,284,133, Cl. 165-133.000.
Gibson, Harry G.; Thorner, Benjamin C.; and Thomas, Jack W., to United States of America, Agriculture. Slope stability warning device for articulated tractors. 4,284,987, Cl. 340-689.000.
Giguere, A. Marcel. Apparatus for utilizing tidal variation to generate electricity. 4,284,901, Cl. 290-53.000.
Gilbert, Lawrence A., to Procter & Gamble Company, The. Alkaline dishwasher detergent. 4,284,524, Cl. 252-99.000.
Gilles, Jack C., to B.F. Goodrich Company, The. Hydroxyl-terminated liquid polymers and process for preparation thereof using a mixture of at least one hydroxyl-containing disulfide and at least one hydroxyl-containing trisulfide. 4,284,483, Cl. 204-158.00R.
Gillette Company, The: *See*—
Douglass, Paul W.; and Trotta, Robert A., 4,283,850, Cl. 30-47.000.
Gillis, James P.; and Robinson, John W., Jr. Atras spare tire mounting kit. 4,284,218, Cl. 224-42.060.
Gillis, John R.; Miraldi, Peter; and Stavers, Marius X., to American Sterilizer Company. Method for biohazard steam sterilization. 4,284,600, Cl. 422-26.000.
Gilmore, Cecilia: *See*—
Miller, Donald E.; and Gilmore, Cecilia, 4,284,655, Cl. 426-602.000.
Gilovich, Paul A., to Microcomputer Systems Corp. Disc, tape and hybrid disc-tape memory apparatus and drive assembly. 4,285,016, Cl. 360-84.000.
Giori, Gualtiero, to De la Rue Giori, S.A. Process and apparatus for converting piles of freshly printed sheets of bank-notes into bundles of bank-notes. 4,283,902, Cl. 53-399.000.
Gipson, Robert M.: *See*—
Marquis, Edward T.; Watts, Lewis W., Jr.; and Gipson, Robert M., 4,284,815, Cl. 564-332.000.
Girling Limited: *See*—
Wilson, Alexander J., 4,283,992, Cl. 91-369.00B.
Giuliani, Gian P.; and Paiella, Roberto, to Anic S.p.A. Process for the cross-linking of high density polyethylene with diene units in solid state. 4,284,743, Cl. 525-349.000.
Glasson, Richard E.: *See*—
Kasting, Edward W.; and Glasson, Richard E., 4,284,037, Cl. 123-41.720.
Glaxo Group Limited: *See*—
Humber, David C.; Laing, Stuart B.; and Weingarten, Gordon G., 4,284,767, Cl. 544-22.000.
Laing, Stuart B.; and Weingarten, Gordon G., 4,284,766, Cl. 544-22.000.
Global Cathodic Protection, Ltd.: *See*—
Brittain, Robert; and Hickman, Andrew L., 4,284,488, Cl. 204-197.000.
Gloersen, Stig. Method and device for transfer of fiber materials transportable by liquids. 4,284,120, Cl. 162-19.000.
Godkin, Louis A., to Textron Inc. Meter riser. 4,284,297, Cl. 285-47.000.
Goebel, Franz; and McHugh, William T., to GTE Products Corporation. Electrochemical cell. 4,284,691, Cl. 429-105.000.
Goettler, Hans J.: *See*—
Moked, Isaac; Handwerk, Richard H.; and Goettler, Hans J., 4,284,105, Cl. 138-42.000.
Goetze AG: *See*—
Lonne, Klaus, 4,284,282, Cl. 277-235.00B.
Gold, Elijah H.; and Chang, Wei K., to Schering Corporation. 7-Chloro-8(substituted amino carbonyloxy)-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,284,555, Cl. 260-239.0BB.
Goodyear Tire & Rubber Company, The: *See*—
Kline, Richard H., 4,284,823, Cl. 568-433.000.
Lal, Joginder; and Sandstrom, Paul H., 4,284,535, Cl. 260-4.00R.
Parker, Dane K.; and Steichen, Richard J., 4,284,516, Cl. 210-757.000.
Gordon, Gary G., to Bell & Howell Company. Methods and apparatus for recording information, supplying wound materials and retaining tubular objects. 4,284,995, Cl. 346-136.000.
Gordon, Stanley: *See*—
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Gordon, Stuart: *See*—
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Gould Inc.: *See*—
Clausing, Challiss I., 4,285,026, Cl. 361-345.000.
Scapes, John N.; and Soos, Joseph S., 4,284,100, Cl. 137-343.000.
Goupil, Jean-Jacques. Composition for chewing gums. 4,284,650, Cl. 426-5.000.
Gowdy, Hugh W.: *See*—
Simpson, Howard D.; Gowdy, Hugh W.; and Light, Steven D., 4,284,531, Cl. 252-465.000.
Grabe, Johan G., to Boart International Limited. Positioning deflection wedges. 4,284,136, Cl. 166-117.500.
Graber, Homer R.: *See*—
Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., 4,283,996, Cl. 91-447.000.
Graeme, Jerald G., to Burr-Brown Research Corporation. Method for thermal testing and compensation of integrated circuits. 4,284,872, Cl. 219-121.0LJ.
Graf, Rupprecht: *See*—
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Graham, Erwin W.; and Graham, Wayne B. Spindle-height gage and method of calibration. 4,283,857, Cl. 33-169.00R.

Graham, Roy R., to PPG Industries, Inc. Sizing composition for glass fibers. 4,284,538, Cl. 260-17.4ST.
Graham, Wayne B.: *See—*
Graham, Erwin W.; and Graham, Wayne B., 4,283,857, Cl. 33-169.00R.
Gram, Hans, to Brodrene Gram A/S. Apparatus for processing articles comprising elevator means for conveying carpet-formed carriers in the vertical direction. 4,284,188, Cl. 198-472.000.
Granda, Edward J.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.
Granges Myby AB: *See—*
Gemmel, Goran; and Aslund, Christer, 4,284,439, Cl. 148-12.0EA.
Grant, Barbara D.: *See—*
Clecak, Nicholas J.; Grant, Barbara D.; and Willson, Carlton G., 4,284,706, Cl. 430-191.000.
Grant, John W., to Du Pont de Nemours, E. I., and Company. Rotor for sedimentation field flow fractionation. 4,284,497, Cl. 209-155.000.
Grant, John W.; Kirkland, Joseph J.; and Yau, Wallace W., to Du Pont de Nemours, E. I., and Company. Apparatus for field flow fractionation. 4,284,498, Cl. 209-155.000.
Graswinckel, Julius V. C., to Oce-Nederland B.V. Original transport system for copying apparatus. 4,284,348, Cl. 355-75.000.
Grattapaglia, Giorgio, to Fiat-Allis Macchine Movimento Terra S.p.A. Control system for power shift transmission. 4,283,964, Cl. 74-471.0XY.
Great Lakes Carbon Corporation: *See—*
Horne, Ottis J., Jr.; and Grindstaff, Lloyd I., 4,284,612, Cl. 423-345.000.
Grebe, John C., Jr.: *See—*
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Greco, Alberto: *See—*
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Greene, Paul E.: *See—*
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Greenlee, Fred S., III. Horizontal accumulating conveyor. 4,284,190, Cl. 198-783.000.
Gregory, Peter: *See—*
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Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, to Hauni-Werke Korber & Co. KG. Method and machine for making a filter rod. 4,283,998, Cl. 493-4.000.
Greve, Helmut, to Dr.-Ing Rudolf Hell GmbH. Driving ink jet recording elements. 4,284,996, Cl. 346-140.00R.
Grewe, Hans: *See—*
Dreyer, Klaus; Grewe, Hans; Kolaska, Johannes; and Reiter, Norbert, 4,284,687, Cl. 428-336.000.
Grieco, Paul A., to University of Pittsburgh. Prostaglandin derivatives. 4,284,794, Cl. 560-121.000.
Grieg, Donald D.: *See—*
Kozlow, Ronald R.; and Grieg, Donald D., 4,284,167, Cl. 181-172.000.
Griffin, Charles F.: *See—*
Blad, Leiv H.; and Griffin, Charles F., 4,284,679, Cl. 428-218.000.
Griffith, James R.; and O'Rear, Jacques G., to United States of America, Navy. Cis-trans fluoropolyol polyacrylate. 4,284,747, Cl. 525-530.000.
Grimmer, Eberhard; Kessler, Gunther; and Muller, Hartwig, to Veb Kombinat Textima. Control device for flat knitting machines having circulating knit carriages. 4,283,926, Cl. 66-75.200.
Grindstaff, Lloyd I.: *See—*
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Grohe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., to Bayer Aktiengesellschaft. Process for the preparation of 4-pyridone-3-carboxylic acids and/or derivatives thereof. 4,284,629, Cl. 424-246.000.
Grose, Ronald D., to Internorth. Fracture arrestor for a pipeline. 4,284,107, Cl. 138-172.000.
Grosjean, Henri: *See—*
Sigel, Pierre L.; Delorme, Raymond L.; and Grosjean, Henri, 4,283,845, Cl. 29-739.000.
Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, to PPG Industries, Inc. Radiation curable Michael addition amine adducts of amide acrylate compounds. 4,284,776, Cl. 544-400.000.
Gruda, Zbigniew; and Kurzeba, Wieslaw. Method of continuous freezing of food products in bulk, especially of fruits and vegetables, and an apparatus for application of the method. 4,283,923, Cl. 62-303.000.
Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig: *See—*
Rimkus, Hans-Georg, 4,285,021, Cl. 360-137.000.
Gruner, Heiko; and Handtmann, Dieter, to Robert Bosch GmbH. Apparatus for measuring the mass of a fluid medium. 4,283,944, Cl. 73-204.000.
Grunewald, Paul: *See—*
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Grupen, William B.: *See—*
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Gsponer, Arnold; and Schnitzer, Hans, to Gebrueder Buehler AG. Take-up head for bulk material conveyor installation. 4,284,369, Cl. 406-52.000.
GTE Laboratories Incorporated: *See—*
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GTE Products Corporation: *See—*
Anderson, Richard W.; Fahey, Robert J.; McClellan, William R.; and Schlener, J. Edward, 4,284,849, Cl. 179-5.00R.
Bessone, Carlo S.; and Roche, William J., 4,284,925, Cl. 315-240.000.
Goebel, Franz; and McHugh, William T., 4,284,691, Cl. 429-105.000.
Gulf Canada Resources Inc.: *See—*
Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., 4,284,360, Cl. 366-140.000.
Gunderson, Charles F. Solar heat collector for gasses. 4,284,068, Cl. 126-438.000.
Gursky, Michael T., to Western Electric Co., Inc. Method of bonding semiconductor devices to carrier tapes. 4,283,839, Cl. 29-589.000.
H. Adler Associates, Inc.: *See—*
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H. C. Price Co.: *See—*
Lively, Steven A.; and Madden, Stephen K., 4,284,385, Cl. 414-747.000.
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Levasseur, Joseph L., 4,284,208, Cl. 221-129.000.
Haack, David J.: *See—*
Chay, Dong M.; and Haack, David J., 4,284,601, Cl. 422-40.000.
Haas, Karl-Heinz; and Lang, Werner, to Kraftwerk Union Aktiengesellschaft. Pipe or vessel with internal lining. 4,284,106, Cl. 138-147.000.
Hacker, Fritz: *See—*
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Haeck, Jacques R. G.: *See—*
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,284,705, Cl. 430-159.000.
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Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,284,683, Cl. 428-285.000.
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Hajos, Zoltan G., to Ortho Pharmaceutical Corporation. Total synthesis of 1RS,4SR,5RS-4-(4,8-dimethyl)-5-hydroxy-7-nonen-1-yl)-4-methyl-3,8-dioxabicyclo[3.2.1]octane-1-acetic acid and related compounds. 4,284,565, Cl. 260-340.600.
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., to Caterpillar Tractor Co. Vehicle steering brake and clutch control. 4,284,182, Cl. 192-4.00A.
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Rabinow, Jacob, 4,284,365, Cl. 404-9.000.
Hall, Richard, to Technalytics, Inc. Naso-gastric tube stabilizer. 4,284,076, Cl. 128-207.180.
Hallberg, Irving H., to Borg-Warner Corporation. Fuel system. 4,284,588, Cl. 261-36.00A.
Hamilton, Joel A. Rotary dispensing chambers with simultaneous size adjustment. 4,284,030, Cl. 118-406.000.
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Hammann, Ingeborg: *See—*
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Hanisko, John C. P., to Bendix Corporation, The. Sequential injector timing apparatus. 4,284,052, Cl. 123-490.000.
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Barstow, Norman C., Jr., 4,284,202, Cl. 220-4.00B.
Hare, Donald S. Method for transferring creative artwork onto fabric. 4,284,456, Cl. 156-234.000.
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Harris, Arthur M., to General Atomic Company. Helically coiled tube heat exchanger. 4,284,134, Cl. 165-163.000.
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Cobb, Raymond F.; and Pelchat, M. Guy, 4,285,060, Cl. 375-1.000.
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Harrison, Colin G.: *See*—
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Harrison, John: *See*—
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Haskins, Steve W.: *See*—
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Hather, Robert K., to Woolpert, Mark. Pickup truck cover and hinge construction. 4,284,303, Cl. 296-100.000.
Hattori, Masaichi: *See*—
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Haug, Theobald, to Ciba-Geigy Corporation. Process for producing crosslinked unsaturated polymers by reaction of β-aminocrotonic acid esters, nitriles or amides with polyisocyanates. 4,284,752, Cl. 528-68.000.
Hauke, Francis E.: *See*—
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Hauni-Werke Korber & Co. KG: *See*—
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,284,088, Cl. 131-280.000.
Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, 4,283,998, Cl. 493-4.000.
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Reuland, Joachim, 4,284,087, Cl. 131-84.00C.
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Hayashi, Takaaki, to Fuji Electric Co., Ltd. Change dispensing machine. 4,284,093, Cl. 133-4.00A.
Hayashida, Yoshihiro; Tateoka, Kiyoshi; and Ando, Hiromi, to Tokico, Ltd. Servo booster. 4,283,993, Cl. 91-376.00R.
Hayashida, Yoshihiro, to Tokico Ltd. Brake pressure control valve. 4,284,308, Cl. 303-6.00C.
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Hayes, Richard A.: *See*—
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Hayward, Richard; Bottrill, John; and Dittburner, Robert C., to Northern Telecom Limited. Universal signal generator for generating telephone system high level signals. 4,284,854, Cl. 179-84.0VF.
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Heiberger, Francis E., to Danly Machine Corporation. Coded automatic counterbalance control. 4,283,929, Cl. 72-7.000.
Heilman, Richard A., to PPG Industries, Inc. Method of and apparatus for comparing surface reflectivity. 4,284,356, Cl. 356-429.000.
Heimala, Seppo O.; and Tuovinen, Frans H., to Outokumpu Oy. Process for coating an electrically nonconductive material with metal. 4,284,665, Cl. 427-203.000.
Heine, Rolf, to Herbert Kannegiesser GmbH. & Co. Automatic stacking apparatus for variable length textile fabrics. 4,284,462, Cl. 156-350.000.
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Henbest, Richard G. C.; and Harrison, John, to Imperial Chemical Industries Limited. Preparation of aminoplast resin particles. 4,284,759, Cl. 528-261.000.

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Henneuse, Paul R., to Precision Monolithics, Inc. Low glitch current switch. 4,285,051, Cl. 365-45.000.

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Henry, Robert M., to National Research Development Corporation. Correlation method. 4,285,046, Cl. 364-728.000.

Henshaw, Brian H. Button construction. 4,283,815, Cl. 24-90.00A.

Hepworth, Edward C.; and Means, Rodney J., to Motorola, Inc. Character framing circuit. 4,284,953, Cl. 328-37.000.

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Herliczek, Siegfried H., to Libbey-Owens-Ford Company. Glazing unit. 4,284,677, Cl. 428-192.000.

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Hertzog, Russel C., to Schlumberger Technology Corporation. Random pulsing of neutron source for inelastic neutron scattering gamma ray spectroscopy. 4,284,886, Cl. 250-270.000.

Hess, Fritz, to EMP AG. Apparatus for soldering components mounted at printed wiring boards. 4,284,225, Cl. 228-180.00R.

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Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,284,914, Cl. 310-68.00D.
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Hetmanski, James R., to Black & Decker Inc. Wire end locating device for a wire-working station. 4,283,971, Cl. 81-9.510.

Hewitt, Ralph W., Jr., to Shell Oil Company. Heat curable polyepoxide-unsaturated aromatic monomer resin compositions. 4,284,753, Cl. 528-89.000.

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Loebner, Egon E.; and Greene, Paul E., 4,284,467, Cl. 156-613.000.

Hickey, John L.; and Wuest, Gerald A., to Dana Corporation. Bearing cap retainer for automotive differential unit. 4,283,963, Cl. 74-400.000.

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Higashi, Ryozi; and Hirano, Hiroyuki, to Pioneer Electronic Corporation. Tone control device. 4,284,965, Cl. 333-28.00T.

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Hirata, Isao, to Tokai Metals Company, Limited. Foldable cup. 4,284,205, Cl. 220-418.000.

Hirschmann, Wilhelm: *See*—
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Hiruma, Masao: *See*—
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Hashimoto, Hideyuki; Kyogoku, Yoshito; and Katada, Hiroshi, 4,284,046, Cl. 123-418.000.
Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, 4,284,887, Cl. 250-272.000.
Matsuzaki, Osamu; Abe, Michio; Mitobe, Koichi; and Tanno, Seikichi, 4,284,662, Cl. 427-68.000.
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Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, 4,284,934, Cl. 318-345.00C.
Ohnishi, Makoto, 4,285,047, Cl. 364-785.000.
Osawa, Michitaka; Matsumoto, Syuzo; and Maekawa, Hitoshi, 4,285,008, Cl. 358-65.000.
Takami, Katsumi; and Matsuzawa, Takashi, 4,285,055, Cl. 368-226.000.

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Tokunaga, Masaaki; Hagi, Chitoshi; and Murayama, Hirokazu, 4,284,440, Cl. 148-31.570.

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Shaffer, Robert C., 4,284,744, Cl. 525-389.000.

Ho, Edmond Y., to Bell Telephone Laboratories, Incorporated. Equalizer sample loading in voiceband data sets. 4,285,061, Cl. 375-15.000.

Ho, Sa V., to Merck & Co., Inc. Process for the preparation of 4-methyl thiazole. 4,284,784, Cl. 548-202.000.

Hochmair, Erwin S.: *See*—
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Hodgkin, Jonathan H., to Commonwealth Scientific and Industrial Research Organization. Iron selective resins prepared from a phenol, HcHO and a disecondary amine. 4,284,512, Cl. 210-688.000.

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Takematsu, Tetsuo; and Hoya, Masaaki, 4,284,813, Cl. 564-168.000.

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Kammerer, Friedrich-Johannes; and Schleyerbach, Rudolf, 4,284,786, Cl. 548-248.000.
Nischwitz, Ehrenfried; and Dursch, Walter, 4,284,410, Cl. 8-471.000.
Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, 4,284,627, Cl. 424-229.000.
Spietschka, Ernst; and Urban, Manfred, 4,284,789, Cl. 549-52.000.

Hoefer, Wayne A., to Caterpillar Tractor Co. Brake control valve having operator feedback. 4,284,309, Cl. 303-50.000.

Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., to Akzona Incorporated. Monochloro-s-triazine derivatives. 4,284,772, Cl. 544-218.000.

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Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., 4,284,557, Cl. 260-239.30B.
Hohenlohe-Oehringen, Kraft; and Fliri, Anton, 4,284,788, Cl. 548-303.000.

Hofmann, Friedrich: *See—*
Scholl, Gerhardt; and Hofmann, Friedrich, 4,284,513, Cl. 210-699.000.

Hofmann, Ruediger; and von Basse, Paul W., to Siemens Aktiengesellschaft. Address buffer for a MOS-memory module. 4,284,910, Cl. 307-238.400.

Hofstetter, Ben H. Relief sculpture guidance method. 4,284,407, Cl. 434-82.000.

Hohenlohe-Oehringen, Kraft; and Fliri, Anton, to Hoffmann-La Roche Inc. Imidazolidone intermediates of biotin. 4,284,788, Cl. 548-303.000.

Hoinski, Walter W., to Power Systems Development Corporation. Door burglar alarm system. 4,284,980, Cl. 340-545.000.

Holdahl, Robert A.: *See—*
Petersen, Paul S.; and Holdahl, Robert A., 4,284,111, Cl. 142-56.000.

Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, to Smith-Kline Corporation. 7,8-Amino, hydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,284,556, Cl. 260-239.0BB.

Hollis, Samuel D., to Union Camp Corporation. Extending the molten stability of poly (ethylene-vinyl acetate) hot-melt adhesives by addition of lithium metal ion. 4,284,543, Cl. 260-27.0EV.

Holmes, Robert H.: *See—*
Janisiewicz, Stanley; and Holmes, Robert H., 4,283,836, Cl. 29-564.100.

Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Compositions including mercaptoorganopolysiloxanes, aliphatically unsaturated polydiorganosiloxanes and carboxylic acid salts of metals. 4,284,539, Cl. 260-18.00S.

Homeyer, Bernhard: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,284,643, Cl. 424-282.000.

Homma, Hiroshige: *See—*
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ohmori, Taiji; and Sato, Makoto, 4,285,042, Cl. 364-426.000.
Tomita, Takao; and Hiruma, Masao, 4,284,178, Cl. 188-281.000.

Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Harison Electric Co., Ltd. Tubular incandescent lamp. 4,285,032, Cl. 362-224.000.

Honeywell Inc.: *See—*
Swensen, Eugene T., 4,284,885, Cl. 250-211.00K.

Honeywell Information Systems Inc.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,285,035, Cl. 364-200.000.

Hooke, John W., to General Electric Company. Method of making vibration resistant electrochemical cell having deformed casing. 4,283,843, Cl. 29-623.100.

Hooker Chemicals & Plastics Corp.: *See—*
Salee, Gideon, 4,284,549, Cl. 260-40.00R.

Hooper, Orville D. Glass cutter with attachment. 4,283,852, Cl. 30-164.950.

Hoover, Maurice R.; Malhotra, Deepak; Bender, Fredrick N.; and Ronzio, Richard A., to Amax, Inc. Process for producing high grade molybdenum disulfide powder. 4,284,244, Cl. 241-24.000.

Horak, Vladimir. Static metering pump. 4,284,210, Cl. 222-14.000.

Horiuchi, Michimasa: *See—*
Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, 4,284,934, Cl. 318-345.00C.

Horne, Ottis J., Jr.; and Grindstaff, Lloyd I., to Great Lakes Carbon Corporation. Preparation of SiC whiskers. 4,284,612, Cl. 423-345.000.

Horner, Patrick J., to Imperial Chemical Industries Limited. Polyester compositions, shaped articles obtained from them and processes for preparing them. 4,284,756, Cl. 528-128.000.

Hornsey, Derek: *See—*
Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, 4,284,510, Cl. 210-614.000.

Horst, William R., to NCR Corporation. Method and apparatus for fabricating a translucent graded density membrane. 4,284,715, Cl. 430-395.000.

Horster, Horst; Hermann, Wilhelm; and Klinkenberg, Klaus, to U.S. Philips Corporation. Wall element comprising a solar collector which is disposed between two transparent panes. 4,284,069, Cl. 126-438.000.

Horton, Horace R.: *See—*
Brown, Rodney J.; Swaisgood, Harold E.; and Horton, Horace R., 4,284,553, Cl. 260-112.00R.

Horton, Richard H.; and Zdeb, John J., to General Electric Company. Solar heliostat enclosure, enclosure foundation and installation method and machine therefor. 4,283,887, Cl. 52-2.000.

Horton, Robert A., to Precision Metalsmiths, Inc. Process and materials for making refractory cores. 4,284,121, Cl. 164-520.000.

Horton, Thomas E.: *See—*
March, Anthony; and Horton, Thomas E., 4,284,935, Cl. 318-280.000.

Horvath, Csaba: *See—*
Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef, 4,284,436, Cl. 148-2.000.

Hoskin, Charles E. Automatic wood cutting and splitting machine. 4,284,112, Cl. 144-3.00K.

Hostetler, Eldon, to Ziggity Systems, Inc. Watering system for fowl and small animals. 4,284,036, Cl. 119-72.500.

Hough, Leslie: *See—*
Thelwall, Leslie A. W.; Hough, Leslie; and Richardson, Anthony C., 4,284,763, Cl. 536-4.000.

House, James B., to Stork Gamco, Inc. Poultry inspection apparatus and method. 4,283,813, Cl. 17-45.000.

Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel: *See—*
Eckhard, Klaus, 4,284,025, Cl. 114-163.000.

Howard, Arthur G. Air-cleaning apparatus. 4,284,421, Cl. 55-222.000.

Howard, Richard E.: *See—*
Craighead, Harold G.; and Howard, Richard E., 4,284,689, Cl. 428-620.000.

Howe, Robert K.; and Lee, Len F., to Monsanto Company. 2-Chloro-4,5-disubstituted-thiazoles useful as herbicidal safeners. 4,284,426, Cl. 71-90.000.

Howell, Steven G.; and Harless, Orville F. Vehicle alarm system. 4,284,973, Cl. 340-65.000.

Hoya Corporation: *See—*
Ishibai, Isao; and Kobayashi, Kunimitsu, 4,284,325, Cl. 350-36.000.

Hoya, Masaaki: *See—*
Takematsu, Tetsuo; and Hoya, Masaaki, 4,284,813, Cl. 564-168.000.

Hrinsin, John A., to ACF Industries, Inc. Railway tank car cradle support. 4,284,012, Cl. 105-362.000.

Hubbard, S. Eugene; Meisterheim, Richard A.; and Symon, Ernest B., to Kawneer Company, Inc. Safety flush bolt entrance door system. 4,283,882, Cl. 49-141.000.

Hubele, Heinz: *See—*
Connor, William R., Jr.; Hubele, Heinz; and Petry, Kurt, 4,284,020, Cl. 112-273.000.

Hubertson, Folke H., to Aktiebolaget Somas Ventiler. Butterfly valves. 4,284,264, Cl. 251-305.000.

Hudson, James L. High pressure pump. 4,284,386, Cl. 415-209.000.

Huebner, Horst: *See—*
Detemple, Manfred; and Huebner, Horst, 4,284,321, Cl. 339-218.00M.

Hughes Aircraft Company: *See—*
Austin, William B.; and Bilow, Norman, 4,284,834, Cl. 585-25.000.
Milden, Martin J.; and Gordon, Stanley, 4,283,844, Cl. 29-623.500.

Hughes Microelectronics Ltd.: *See—*
Fowler, Albert L.; Henderson, Alan G.; Stevenson, Alastair K.; and Walker, David M., 4,284,990, Cl. 340-870.320.

Hughes, Thomas E. Dental tooth bur. 4,284,406, Cl. 433-165.000.

Huignard, Jean-Pierre; and Herriau, Jean-Pierre, to Thomson-CSF. Acousto-optical imagery system based on coherent holographic detection in real time. 4,284,324, Cl. 350-3.640.

Hulme, Joseph M., to Polysar Limited. Dilute solution apparatus. 4,283,949, Cl. 73-864.340.

Hulot, Michel; and Prigent, Raymond, to Commissariat a l'Energie Atomique. Method and device for the automatic reading of the irradiation dose of a portable dosimeter. 4,284,892, Cl. 250-388.000.

Humber, David C.; Laing, Stuart B.; and Weingarten, Gordon G., to Glaxo Group Limited. Process for preparing 3-carbamoyloxymethyl cephalosporins. 4,284,767, Cl. 544-22.000.

Hussain, Anwar A.; Hirai, Shinichiro; and Bawarshi, Rima, to University of Kentucky Research Foundation, The. Nasal administration of propranolol. 4,284,648, Cl. 424-330.000.

Hutt, Jack W.; and Blanco, Fernando E., to Products Research & Chemical Corp. Polyurethane sealant system. 4,284,751, Cl. 528-45.000.

Hwa, Stephen C. P. Novel protein curd product and process of preparation. 4,284,656, Cl. 426-641.000.

Hydril Company: *See—*
Mott, James D., 4,284,141, Cl. 166-315.000.

Hydro Ag-Tech Inc.: *See—*
Engle, Carl E.; and Moldenhauer, Don, 4,284,246, Cl. 241-222.000.

Hydrodynamic Energy Systems Corp.: *See—*
Borgren, Peter M.; and Amatuzio, Albert J., 4,284,902, Cl. 290-53.000.

Hyman, Seymour: *See—*
Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., 4,284,444, Cl. 156-60.000.

Ibamoto, Masahiko: *See—*
Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, 4,284,934, Cl. 318-345.00C.

Icaran, Andres A. Y., to Nacional de Ceramica, S.A. Toilet tanks with built-in water supply valve. 4,283,802, Cl. 4-353.000.

Ichige, Noriyuki: *See—*
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.

Ichikawa, Koji: *See—*
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.

Ichikawa Woolen Textile Co., Ltd.: *See*—
Awano, Shunya; and Shittaka, Akio, 4,284,680, Cl. 428-234.000.
Iezuka, Isamu: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.
Ignatjev, Vladimir, to Burroughs Corporation. Document feeder for document-handling machine. 4,284,269, Cl. 271-122.000.
Iida, Hiroshi; Kometani, Kiichi; and Yanagi, Masana, to Toray Industries, Inc. Polyethylene terephthalate molding compositions. 4,284,540, Cl. 260-22.00R.
Iizaka, Isao: *See*—
Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Iizaka, Isao, 4,284,344, Cl. 355-14.00E.
Ikeda, Hiroshi; and Sakurai, Seiichi, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying machine. 4,284,346, Cl. 355-67.000.
Ikeuchi, Hiroshi. Atomizing unit of two-phase type. 4,284,239, Cl. 239-8.000.
Ikuno, Yuji, to Olympus Optical Co., Ltd. Photographing apparatus for an endoscope. 4,284,338, Cl. 354-32.000.
Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, to Chemetics International. Method and apparatus for concentrating a liquid. 4,284,469, Cl. 159-28.00R.
Illinois Tool Works Inc.: *See*—
Peterson, Francis C.; Barth, Gerald D.; and Slotten, Rodney O., 4,283,986, Cl. 411-340.000.
Imada, Isuke: *See*—
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,284,644, Cl. 424-285.000.
Imamura, Tetsuya; and Shiozaki, Ryozi, to Kao Soap Co., Ltd. Liquid abrasive-containing cleanser composition. 4,284,533, Cl. 252-542.000.
Imanaka, Kiyoji: *See*—
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.
Immutron, Inc.: *See*—
Kelton, Arden A.; Waters, William P.; Shrunk, David G.; and Bell, Michael L., 4,284,602, Cl. 422-72.000.
Imperial Chemical Industries Limited: *See*—
Henbest, Richard G. C.; and Harrison, John, 4,284,759, Cl. 528-261.000.
Horner, Patrick J., 4,284,756, Cl. 528-128.000.
Kaye, Albert E.; and Tucker, Alan C., 4,284,582, Cl. 260-464.000.
Whittaker, Graham; and O'Brien, Anne, 4,284,783, Cl. 546-345.000.
Imperial Metal Industries (Kynoch) Limited: *See*—
Evans, Geoffrey I.; and Gordon, Stuart, 4,284,592, Cl. 264-3.00R.
Inco Limited: *See*—
England, John R., 4,284,154, Cl. 175-325.000.
Indech, Robert B. Thermoelectric converter and method. 4,284,838, Cl. 136-202.000.
Ingersoll-Rand Company: *See*—
Chaiko, Walter M., 4,284,379, Cl. 411-61.000.
Inokuchi, Norio; Fukumoto, Teruhisa; and Mori, Yoshio, to Teitin Limited. Process for producing foamed articles of aromatic polyesters. 4,284,596, Cl. 264-45.300.
Inoue, Eiichi; and Nakayama, Takao, to Fuji Photo Film Co., Ltd. Peel-apart-developable light-sensitive materials and image-forming method using the same. 4,284,703, Cl. 430-142.000.
Inoue, Kimio: *See*—
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.
Institut National de Recherche Chimique Appliquee: *See*—
Bolle, Jean; and Dabir, Andre, 4,284,520, Cl. 252-45.000.
Intenco, Inc.: *See*—
Solbakken, Age; Apffel, Fred P.; Robinson, Sam P.; and Hayes, Bobby L., 4,284,616, Cl. 423-461.000.
International Business Machines Corporation: *See*—
Abbott, Jerry J.; Fuller, Sterritt R.; and Jachimiak, Paul D., 4,284,701, Cl. 430-111.000.
Arter, Nelson K.; Hauke, Francis E.; and Weber, Jesse A., 4,285,017, Cl. 360-77.000.
Choberka, John M.; and Rex, Donald K., 4,284,363, Cl. 400-124.000.
Clecak, Nicholas J.; Grant, Barbara D.; and Willson, Carlton G., 4,284,706, Cl. 430-191.000.
Hodge, Gene D., 4,285,064, Cl. 455-13.000.
Jackson, Timothy; Malkemes, Charles D.; and Zipoy, William L., 4,284,362, Cl. 400-124.000.
Leontiades, Kyriakos L., 4,284,001, Cl. 101-93.050.
Mulvany, Richard B.; and Patel, Tulsidas R., 4,285,018, Cl. 360-98.000.
International Computers Limited: *See*—
Campbell, William, 4,285,002, Cl. 357-74.000.
International Flavors & Fragrances Inc.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,284,819, Cl. 568-327.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.
International Foodservice Equipment Systems, Inc.: *See*—
Keiser, William, 4,284,880, Cl. 219-415.000.
International Playtex, Inc.: *See*—
Kaspar, Peter D.; and Satterfield, Carroll D., 4,284,400, Cl. 425-444.000.
International Standard Electric Corp.: *See*—
Brunn, Otto; and Nill, Eberhard, 4,285,013, Cl. 358-248.000.
Fischer, Bruno, 4,284,695, Cl. 430-24.000.
International Telephone and Telegraph Corporation: *See*—
Anhalt, John W., 4,284,313, Cl. 339-61.00M.
Jankowitz, Gerald, 4,284,323, Cl. 350-1.600.
November, Milton H., 4,283,936, Cl. 73-32.00A.
Internorth: *See*—
Grose, Ronald D., 4,284,107, Cl. 138-172.000.
Intersonics Incorporated: *See*—
Rey, Charles A., 4,284,403, Cl. 432-1.000.
Intertechnology/Solar Corporation: *See*—
Loeb, Sidney, 4,283,913, Cl. 60-641.00A.
Mehta, Gurmukh D., 4,283,918, Cl. 62-112.000.
Investigacion Fic Fideicomiso: *See*—
Martin, John K., 4,284,424, Cl. 65-241.000.
Iosifian, Andronik G.; Fotin, Vladilen P.; Bondaletov, Vladimir N.; Lapshin, Evgeny I.; Ostrovsky, Alexandr S.; and Savchenko, Alexandr I. Method for breaking direct current and d.c. breaker for effecting same. 4,284,927, Cl. 315-340.000.
Ireland, Robert W.: *See*—
Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,284,742, Cl. 525-329.000.
Isaacs, Jim W.: *See*—
Sutcliffe, Peter W.; Isaacs, Jim W.; and Lyon, Colin E., 4,284,593, Cl. 264-0.500.
Ishibai, Isao; and Kobayashi, Kunimitsu, to Hoya Corporation. Eye span adjustment mechanism for binoculars. 4,284,325, Cl. 350-36.000.
Ishibashi, Kiyoshi: *See*—
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.
Ishibashi, Norio; and Nakano, Kazuo, to OKI Electric Industry Co., Ltd. Thermal printing system. 4,284,876, Cl. 219-216.000.
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuichi, to Hodogaya Chemical Co., Ltd.; and Matsushita Electric Industrial Co., Ltd. Light transmission particle for forming color image. 4,284,696, Cl. 430-42.000.
Ishida, Hideo; and Sukurai, Yasuhiko, to Nippondenso Co., Ltd. Flasher apparatus for vehicles. 4,284,974, Cl. 340-81.00R.
Ishida, Takashi, to Nissan Motor Company, Limited. Exhaust system of automotive vehicle. 4,284,162, Cl. 180-296.000.
Ishii, Toshiaki; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Emergency stop apparatus for electric elevators. 4,284,175, Cl. 187-29.00R.
Ishii, Yoshiko: *See*—
Tamuri, Masaki; Kanno, Mitsuo; and Ishii, Yoshiko, 4,284,722, Cl. 435-94.000.
Ishikawa, Fumiyoshi; and Ashida, Shinichiro, to Daiichi Seiyaku Co., Ltd. 1,2,3,5-Tetrahydroimidazothienopyrimidin-2-ones. 4,284,773, Cl. 544-247.000.
Ishizawa, Akio: *See*—
Oguchi, Toshihiko; Ishizawa, Akio; and Yoshida, Hiromi, 4,284,700, Cl. 430-105.000.
Isomura, Yasuo: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.
Ito, Fumio; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Photographic apparatus. 4,284,337, Cl. 354-25.000.
Ito, Kazuhiko: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.
Ito, Noriki: *See*—
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Itoga, Keiji: *See*—
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.
ITT Industries, Inc.: *See*—
Belart, Juan, 4,283,994, Cl. 91-391.00R.
Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, 4,284,903, Cl. 307-10.0LS.
Iwanaga, Kouichi; and Kakumoto, Hiromi, to Matsushita Electric Works, Ltd. Battery charging device having battery state indicating function. 4,284,944, Cl. 320-48.000.
Iwanami, Eiichi, to Kabushiki Kaisha Daini Seikosha. Semiconductor device. 4,284,999, Cl. 357-22.000.
Iwanishi, Masaaki: *See*—
Fuse, Noboru; Muramoto, Kenichi; Tani, Keizo; and Iwanishi, Masaaki, 4,284,998, Cl. 357-22.000.
Iwata, Hiroshi; and Hasegawa, Wataru, to West Electric Co., Ltd. Automatic focusing camera. 4,284,336, Cl. 354-25.000.
J. Hengstler K.G.: *See*—
Neher, Hans, 4,284,881, Cl. 235-1.00C.
Jaccodine, Ralph J.; and Kestenbaum, Ami, to Bell Telephone Laboratories; and Western Electric Co., Inc. Insulation layer reflow. 4,284,659, Cl. 427-53.100.
Jachimiak, Paul D.: *See*—
Abbott, Jerry J.; Fuller, Sterritt R.; and Jachimiak, Paul D., 4,284,701, Cl. 430-111.000.

Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., to Cessna Aircraft Company, The. Header height valve. 4,283,996, Cl. 91-447.000.
Jackson, Edward L. Combination portable and stationary, bench-mounted chain saw apparatus. 4,283,980, Cl. 83-798.000.
Jackson, Timothy; Malkemes, Charles D.; and Zipoy, William L., to International Business Machines Corp. Printer control logic. 4,284,362, Cl. 400-124.000.
Jagenberg Werke AG: *See*—
Knoll, Heiko, 4,283,975, Cl. 83-76.000.
Jagger, James W.: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.
Jahn-Held, Wilhelm: *See*—
Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, 4,284,509, Cl. 210-610.000.
Jahnke, Otto C.: *See*—
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,284,521, Cl. 252-62.3BT.
James, Edward A., to RCA Corporation. Fabrication of video disc flyleads. 4,284,712, Cl. 430-312.000.
Jamieson, Alexander: *See*—
Mawson, Maurice; and Jamieson, Alexander, 4,284,871, Cl. 219-121.0PV.
Janisiewicz, Stanley; and Holmes, Robert H., to Universal Instruments Corporation. Multi-module dip transfer and insertion machine. 4,283,836, Cl. 29-564.100.
Jankowitz, Gerald, to International Telephone and Telegraph Corporation. Trichroic mirror. 4,284,323, Cl. 350-1.600.
Japan Air Line Co., Ltd.: *See*—
Shuto, Masamoto, 4,284,181, Cl. 191-22.0DM.
Japan Crown Cork Co., Ltd.: *See*—
Murayama, Kashiwa, 4,284,023, Cl. 113-116.0QA.
Japan Exlan Company, Ltd.: *See*—
Maruyama, Kunio, 4,284,615, Cl. 423-447.400.
Jatteau, Michel: *See*—
Pergrale, Jean; and Jatteau, Michel, 4,284,891, Cl. 250-363.00S.
JB Development Corporation: *See*—
Edward, Robert M., Jr., 4,283,939, Cl. 73-81.000.
Jenne, Gustav. Control device for the forward movement and rearward movement of pneumatic ram boring devices. 4,284,147, Cl. 173-91.000.
Jewell, William J. Methane production by attached film. 4,284,508, Cl. 210-603.000.
Jhono, Shigeru, to Tempo G. Method of manufacturing and interlocking jewelry with precise preforms. 4,283,831, Cl. 29-423.000.
Joa, Curt G. Method and apparatus for applying elastic bands transversely to a diaper line. 4,284,454, Cl. 156-163.000.
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, to Nippon Zeon Co., Ltd. Method of manufacturing hollow fiber. 4,284,594, Cl. 264-41.000.
Johns Hopkins University, The: *See*—
Brusilow, Saul W.; Batshaw, Mark L.; and Radin, Norman S., 4,284,647, Cl. 424-317.000.
Johns-Manville Corporation: *See*—
Sullivan, Daryl D., 4,285,034, Cl. 362-305.000.
Johnson, Garland A.; and Peuler, Jacob D., to Upjohn Company, The. Radioenzymatic assay of catecholamines. 4,284,587, Cl. 564-365.000.
Johnson, Michael R.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,284,829, Cl. 568-764.000.
Johnson, Robert N.: *See*—
Overman, David L.; and Johnson, Robert N., 4,284,862, Cl. 200-61.45R.
Johnson Rubber Company, The: *See*—
Lucik, Dennis M., 4,284,366, Cl. 404-44.000.
Johnson, Steven A. Internal refractor focusing solar energy collector apparatus and method. 4,284,839, Cl. 136-246.000.
Johnston, James J.; and Clarke, Robert W. Ball carrier. 4,284,217, Cl. 224-30.00R.
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Jones, Addison B., to Rockwell International Corporation. High resolution mask and method of fabrication thereof. 4,284,678, Cl. 428-195.000.
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Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, 4,284,469, Cl. 159-28.00R.
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Junghanns, Martin, to Hoechst Aktiengesellschaft. Apparatus for the electric level control of a developing solution in a storage tank. 4,284,343, Cl. 354-318.000.
Junker, Arnold: *See*—
Salvana, Frank; and Junker, Arnold, 4,284,174, Cl. 184-6.400.
Kabel-und Metallwerke Gutehoffnungshuette AG: *See*—
Schatz, Friedrich; and Ziemek, Gerhard, 4,283,824, Cl. 29-157.400.
Kabushiki Kaisha Daini Seikosha: *See*—
Iwanami, Eiichi, 4,284,999, Cl. 357-22.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Ohno, Eiji; and Chikugo, Kazuo, 4,284,431, Cl. 75-212.000.
Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,284,004, Cl. 101-111.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Shimodaira, Tadayoshi; and Mitsui, Yoshihiro, 4,284,002, Cl. 101-99.000.
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Takeda, Nobuhiro; Hattori, Masaichi; and Mizuno, Shigeo, 4,284,295, Cl. 280-803.000.
Kainuma, Hiroyuki; Okuda, Yukio; and Fujisawa, Yoshiaki, to Sawafuji Electric Co., Ltd. Refrigerating device. 4,283,920, Cl. 62-126.000.
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Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,284,556, Cl. 260-239.0BB.
Kakeno, Sadao, to Ricoh Co., Ltd. Multi-nozzle head for ink jet printer with ink supply pipe in ink chamber. 4,284,993, Cl. 346-75.000.
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Iwanaga, Kouichi; and Kakumoto, Hiromi, 4,284,944, Cl. 320-48.000.
Kalivas, Zissis, to Lorain Products Corporation. Rectifier system with failure alarm circuitry. 4,285,023, Cl. 361-91.000.
Kalns, Ilmars, to Eaton Corporation. Housing assembly for electric vehicle transaxle. 4,283,968, Cl. 74-701.000.
Kami, Tomohiro: *See*—
Abura, Yoshinori; Ueda, Fumiya; Morihara, Nobuyuki; and Kami, Tomohiro, 4,284,877, Cl. 219-222.000.
Kaminow, Ivan P.: *See*—
Carruthers, John R.; Kaminow, Ivan P.; and Schmidt, Ronald V., 4,284,663, Cl. 427-164.000.
Kamiya, Hideo: *See*—
Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, 4,284,486, Cl. 204-195.00S.
Kamiyama, Akira, to Mitsuba Electric Mfg. Co., Ltd. Method of manufacturing a commutator. 4,283,841, Cl. 29-597.000.
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Narayan, Thirumurti; and Kan, Peter T., 4,284,730, Cl. 521-160.000.
Kanai, Hiroyuki. Combing cylinder of comber. 4,284,090, Cl. 132-11.00R.
Kanazawa, Yukio. Bending apparatus. 4,284,022, Cl. 113-58.000.
Kane, John L., to Owens-Corning Fiberglas Corporation. Apparatus for forming filaments. 4,284,395, Cl. 425-66.000.
Kaneko, Katsumi: *See*—
Okumura, Yoshiharu; and Kaneko, Katsumi, 4,284,831, Cl. 568-899.000.
Kaneko, Noriaki: *See*—
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.
Kaneko, Tadao: *See*—
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Kaneko, Takushi: *See*—
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Kanesho Company Limited: *See*—
Akahira, Rokuro; and Someya, Shinzo, 4,284,427, Cl. 71-93.000.
Kanno, Mitsuo: *See*—
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Kanno, Tadaaki: *See*—
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Kao Soap Co., Ltd.: *See*—
Imamura, Tetsuya; and Shiozaki, Ryozi, 4,284,533, Cl. 252-542.000.
Kapoor, Ramesh C.: *See*—
Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., 4,284,444, Cl. 156-60.000.
Karn, William S. Reverse osmosis electrodialysis combined means. 4,284,492, Cl. 204-299.00R.
Kasai, Shigeo; Nishiyama, Toshiaki; and Kawada, Kiju, to Amada Company Ltd. Notching machine. 4,283,978, Cl. 83-620.000.
Kasama, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Submerged ultrasonic viewer for a nuclear reactor. 4,284,473, Cl. 176-19.00R.
Kashio, Toshio, to Casio Computer Co., Ltd. Electronic musical instrument. 4,283,983, Cl. 84-1.190.
Kaspar, Peter D.; and Satterfield, Carroll D., to International Playtex, Inc. Positive extractor for cup molding machine. 4,284,400, Cl. 425-444.000.
Kasper, Richard F.; and Carvalko, Joseph R. Urinary retention catheter. 4,284,081, Cl. 128-349.00B.
Kasper, Robin: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.
Kasting, Edward W.; and Glasson, Richard E., to Cummins Engine Company, Inc. Internal combustion engine coolant system. 4,284,037, Cl. 123-41.720.

Katada, Hiroshi: *See*—
Hashimoto, Hideyuki; Kyogoku, Yoshito; and Katada, Hiroshi, 4,284,046, Cl. 123-418.000.
Katayama, Tsutomu: *See*—
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
Kato, Hisatoyo; Matsumoto, Seiji; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Method for recording radiation image using stimulable phosphor. 4,284,889, Cl. 250-355.000.
Kato, Tatuya: *See*—
Kazami, Takeo; Enomoto, Takamichi; Kato, Tatuya; and Fukagai, Toshio, 4,284,698, Cl. 430-59.000.
Kaufman, Lawrence G.; Merriam, Charles N.; and Pepe, Enrico J., to Union Carbide Corporation. Ambient temperature curable hydroxyl containing polymer/silicon compositions. 4,284,548, Cl. 260-38.000.
Kaufmann, John, Jr., to Kaufmann, John, Jr. Pipe coupling. 4,284,298, Cl. 285-302.000.
Kawabata, Hiroshi: *See*—
Sagara, Fumio; Kawabata, Hiroshi; and Shiiba, Kiyonori, 4,284,793, Cl. 560-78.000.
Kawada, Kiju: *See*—
Kasai, Shigeo; Nishiyama, Toshiaki; and Kawada, Kiju, 4,283,978, Cl. 83-620.000.
Kawada, Mitsuru: *See*—
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,284,644, Cl. 424-285.000.
Kawada, Shigeki; Fujioka, Yoshiki; and Ohta, Naoto, to Fujitsu Fanuc Limited. System for driving DC motor. 4,284,932, Cl. 318-338.000.
Kawada, Shigeki; Fujioka, Yoshiki; Ohta, Naoto; and Koiwai, Yutaka, to Fujitsu Fanuc Limited. Device for detecting opposite phase and open phase. 4,284,939, Cl. 318-453.000.
Kawamata, Teruyoshi: *See*—
Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, 4,285,032, Cl. 362-224.000.
Kawamura, Keita: *See*—
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
Kawamura, Masaharu; Shigeta, Yoshihiro; Uchidoi, Masanori; Sugiura, Yoji; and Yamamoto, Hiroshi, to Canon Kabushiki Kaisha. Exposure control device for camera. 4,284,333, Cl. 354-23.00D.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Tatebayashi, June; and Yano, Kazuaki, 4,284,401, Cl. 431-7.000.
Kawasaki Motors Corp., U.S.A.: *See*—
Blass, Jaroslav, 4,284,161, Cl. 180-184.000.
Kawneer Company, Inc.: *See*—
Hubbard, S. Eugene; Meisterheim, Richard A.; and Symon, Ernest B., 4,283,882, Cl. 49-141.000.
Kaye, Albert E.; and Tucker, Alan C., to Imperial Chemical Industries Limited. Process for the preparation of cyclopropane derivatives, intermediates in the synthesis of pyrethroid insecticides. 4,284,582, Cl. 260-464.000.
Kaye, Dianne. Woven ground for embroidery. 4,284,021, Cl. 112-439.000.
Kazami, Takeo; Enomoto, Takamichi; Kato, Tatuya; and Fukagai, Toshio, to Ricoh Company, Ltd. Layered electrophotographic photoconductor. 4,284,698, Cl. 430-59.000.
Kearney, Thomas J., to Champion Spark Plug Company. Paint spray booth with water curtain. 4,283,999, Cl. 98-115.0SB.
Keck, David R., to Tenneco Chemicals, Inc. In-line pressurized wet screening apparatus. 4,284,500, Cl. 209-250.000.
Keiser, William, to International Foodservice Equipment Systems, Inc. Heating well. 4,284,880, Cl. 219-415.000.
Keller, Alex J.; Flowers, Thad; Williams, Joseph R.; and Patel, Navinchandra K., to Automatic Material Handling, Inc. Spindle cleaning apparatus. 4,283,909, Cl. 57-306.000.
Keller, James M., to Eltra Corporation. Ignition cable terminal construction. 4,284,322, Cl. 339-223.00S.
Kelly, Donald V. Integral handle stop and latch member for sliding screen closures. 4,284,299, Cl. 292-87.000.
Kelton, Arden A.; Waters, William P.; Shrunk, David G.; and Bell, Michael L., to Immutron, Inc. Integrated fluid manipulator. 4,284,602, Cl. 422-72.000.
Kempen, Simone J.: *See*—
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,284,705, Cl. 430-159.000.
Kendall Company, The: *See*—
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,284,084, Cl. 128-748.000.
Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., 4,284,459, Cl. 156-245.000.
Kengaku, Katsumi: *See*—
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
Kennecott Copper Corporation: *See*—
George, David B.; and Bailey, Leonard K., 4,283,947, Cl. 73-863.110.
Kennecott Corporation: *See*—
Hamilton, Robert S., 4,284,610, Cl. 423-290.000.
Kessler, Gunther: *See*—
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Kestenbaum, Ami: *See*—
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Kihara, Keiichi: *See*—
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Kikuchi, Toshiyuki: *See*—
Namiki, Ryoichi; Higashi, Yuichiro; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, 4,284,875, Cl. 219-216.000.
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiro; and Egawa, Mitsuo, to Mitsubishi Chemical Ind., Limited. Pharmaceutically active 2-(4-am..obutoxy)stilbenes. 4,284,637, Cl. 424-267.000.
Kilar, Louise J. Portable solar heater. 4,284,067, Cl. 126-436.000.
Kilmer, Paul R.; and Bula, Roger M., to Cooper Industries, Inc. Electric conductor wrapping tool. 4,284,109, Cl. 140-122.000.
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., to Shell Oil Company. Hydrogenation process. 4,284,835, Cl. 585-277.000.
Kimura, Hitoshi: *See*—
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
Kimura, Shougo: *See*—
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Kinard, William C.; Carter, Donald F.; and Young, Cecil G., to Kinard, William C. Apparatus for reducing racket handles. 4,283,818, Cl. 29-76.00R.
Kindell, Jerry L.; and Flynn, Richard T., to Honeywell Information Systems Inc. Apparatus and method for rewrite data insertion in a three descriptor instruction. 4,285,035, Cl. 364-200.000.
King, Phillip W., to American Home Products Corporation. Cartridge for strip chart recorders and method of using same. 4,284,252, Cl. 242-198.000.
King, Richard M.: *See*—
Logan, Ted J.; and King, Richard M., 4,284,580, Cl. 260-428.500.
Kinno, Bunji: *See*—
Takeda, Shojiro; Kinno, Bunji; and Yamaguchi, Yutaka, 4,283,890, Cl. 52-143.000.
Kirkendall, Richard D.; Drysdale, William H.; Kokinakis, Louise D.; and Burns, Bruce P., to United States of America, Army. Double ramp discarding sabot. 4,284,008, Cl. 102-521.000.
Kirkland, Joseph J.: *See*—
Grant, John W.; Kirkland, Joseph J.; and Yau, Wallace W., 4,284,498, Cl. 209-155.000.
Kirkland, Kerry G., to Armco Inc. Method and apparatus for remote installation and servicing of underwater well apparatus. 4,284,142, Cl. 166-344.000.
Kitagawa, Yukio; and Moriya, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing device using a subroutine call instruction. 4,285,036, Cl. 364-200.000.
Kiwala, Jacob: *See*—
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,284,819, Cl. 568-327.000.
Klann, Joerg: *See*—
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Klauke, Erich: *See*—
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Kleber, Heinrich: *See*—
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Kleebaur, Karl: *See*—
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Hagenlocher, Walter; Hesse, Heinz; Sohnle, Rudiger; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Kleebaur, Karl, 4,284,915, Cl. 310-68.00D.
Kleiman, Stanley. Festoon support device. 4,284,258, Cl. 248-251.000.
Kleindienst GmbH & Co. Kg: *See*—
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Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Methyl substituted norborane carboxaldehydes. 4,284,824, Cl. 568-445.000.
Kline, Gaylen O., to National Machinery Company, The. Bar end dropper for forging machines or the like. 4,283,974, Cl. 83-42.000.
Kline, Richard H., to Goodyear Tire & Rubber Company, The. Process for preparing 3-(3,5-di-tert.alkyl-4-hydroxy-phenyl)-2,2-di-substituted propionaldehydes. 4,284,823, Cl. 568-433.000.
Klinger AG: *See*—
Kruschik, Julius, 4,284,098, Cl. 137-219.000.
Klinkenberg, Klaus: *See*—
Horster, Horst; Hermann, Wilhelm; and Klinkenberg, Klaus, 4,284,069, Cl. 126-438.000.
Klockner-Humboldt-Deutz AG: *See*—
Epper, Wolfgang; and Graf, Rupprecht, 4,283,938, Cl. 73-59.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Carstensen, Jes-Ernst; and Nau, Walter, 4,284,156, Cl. 180-24.020.
Klopsch, Siegfried, to Dr. Ing. Rudolf Hell GmbH. Apparatus for producing corrected color chromatic components. 4,285,009, Cl. 358-76.000.

Knapp, Peter: *See*—
Galliker, Franz; and Knapp, Peter, 4,284,933, Cl. 318-345.00C.
Knoll, Dieter B., to Hewlett-Packard Company. Volume measuring apparatus. 4,283,945, Cl. 73-269.000.
Knoll, Heiko, to Jagenberg Werke AG. System for setting the sheet length on a crosscutter for webs of material. 4,283,975, Cl. 83-76.000.
Knudsen, Ronald D.; and Fahey, Darryl R., to Phillips Petroleum Co. Monohalogenation of substituted phenol. 4,284,830, Cl. 568-779.000.
Knupfer, Hans; and Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of 1,2,3-triazoles substituted in the 2-position. 4,284,787, Cl. 548-256.000.
Kobatake, Tatsuo: *See*—
Tate, Masahisa; Yoshiwara, Tetsuya; and Kobatake, Tatsuo, 4,284,214, Cl. 222-590.000.
Kobayashi, Hideo: *See*—
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Kobayashi, Kunimitsu: *See*—
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Kobe Steel, Ltd.: *See*—
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.
Koch, Friedo, to Hauni-Werke Korber & Co. KG. Method and apparatus for regulating the timing of operation of means for influencing cigarettes or the like. 4,284,198, Cl. 209-537.000.
Kockums Chemical AB: *See*—
Agerhem, Halina; and Nilsson, Hans J., 4,284,719, Cl. 435-18.000.
Koehler, Charles W.; and Van Ommering, Gerrit, to Ford Aerospace & Communications Corp. Cylindrical tapered sleeve optimized for weight and heat conduction. 4,284,690, Cl. 429-26.000.
Koenig, Franklin R.: *See*—
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Koenig, Herbert G., Jr.: *See*—
Allen, Louis B., Jr.; Koenig, Herbert G., Jr.; and Rice, Robert R., 4,284,963, Cl. 331-94.50H.
Koike, Kengo: *See*—
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Koiwai, Yutaka: *See*—
Kawada, Shigeki; Fujioka, Yoshiki; Ohta, Naoto; and Koiwai, Yutaka, 4,284,939, Cl. 318-453.000.
Kokinakis, Louise D.: *See*—
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Kokusai Denshin Denwa Co., Ltd.: *See*—
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Kolaska, Johannes: *See*—
Dreyer, Klaus; Grewe, Hans; Kolaska, Johannes; and Reiter, Norbert, 4,284,687, Cl. 428-336.000.
Kole, Richard P., to Aluminum Company of America. Method for applying lubricants onto metal working surfaces. 4,284,670, Cl. 427-422.000.
Kolling, Peter: *See*—
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Koltuniak, Michael A.: *See*—
Case, Leo L.; and Koltuniak, Michael A., 4,284,493, Cl. 204-299.0EC.
Komatsu, Michiyasu: *See*—
Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, 4,284,432, Cl. 106-73.200.
Komatsu, Mikiya; Takashima, Syuichi; and Suzuki, Syunsuke, to Nissan Motor Co., Ltd. Die casting machine for manufacturing heat resistant impellers. 4,284,124, Cl. 164-314.000.
Kometani, Kiichi: *See*—
Iida, Hiroshi; Kometani, Kiichi; and Yanagi, Masana, 4,284,540, Cl. 260-22.00R.
Kommandiittiyhio Finnpipette Osmo A Suovaniemi: *See*—
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Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi: *See*—
Tervamaki, Jukka, 4,283,950, Cl. 73-864.140.
Komoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Advance mechanism for close-up lens. 4,284,330, Cl. 350-255.000.
Kondo, Youichi: *See*—
Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, 4,284,897, Cl. 250-461.00B.
Korenobu, Toshihiko. Locking member for a clamping bolt. 4,284,114, Cl. 411-119.000.
Korom, Gordon K., to Abbott Laboratories. Test tube decanter rack. 4,284,603, Cl. 422-101.000.
Kovats, Tibor F. I.: *See*—
Dyment, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., 4,284,884, Cl. 250-205.000.
Kozak, James M.: *See*—
Porter, Charles A.; and Kozak, James M., 4,284,305, Cl. 297-452.000.
Kozlow, Ronald R.; and Grieg, Donald D., to Electronic Research Assoc., Inc. Sound reproducing device. 4,284,167, Cl. 181-172.000.
Kraf, Inc.: *See*—
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Krafft, Werner: *See*—
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Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, to Ernst Leitz Wetzlar GmbH. Microscope with attachable illuminating devices. 4,284,327, Cl. 350-87.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Haas, Karl-Heinz; and Lang, Werner, 4,284,106, Cl. 138-147.000.
Schon, Friedrich, 4,284,501, Cl. 210-96.100.
Kramer, Peter, to BASF Aktiengesellschaft. Apparatus for treating uremic patients. 4,284,502, Cl. 210-98.000.
Kramer, Ulrich; and Chenevard, Alexis, to SAPAL, Societe Anonyme des Plieuses Automatiques. Automatic packing line. 4,284,187, Cl. 198-435.000.
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Plempel, Manfred, to Bayer Aktiengesellschaft. Combating fungi with 1-phenoxy-2-(2,4-dichlorophenyl)-1-(1,2,4-triazol-1-yl)-ethan-2-ones and -ols. 4,284,639, Cl. 424-269.000.
Krasberg, Alan. Diving headgear for use in return-line diving systems. 4,284,075, Cl. 128-201.270.
Kraus, Peter: *See*—
Lunkenheimer, Winfried; Brandes, Wilhelm; and Kraus, Peter, 4,284,791, Cl. 560-43.000.
Krause, Horst E.; and Stanley, Edwin L. Method and apparatus for pumping blood within a vessel. 4,284,073, Cl. 128-1.00D.
Kreienbuhl, Claude: *See*—
Heiniger, Wilfred; Kreienbuhl, Claude; and Millan, Manuel, 4,283,863, Cl. 354-25.000.
Krekel, Jorg: *See*—
Schenk, Norbert; Krekel, Jorg; Losacker, Paul; and Swodenk, Wolfgang, 4,284,576, Cl. 260-369.000.
Kren, George J.; and Koenig, Franklin R., to Tencor Instruments. Acoustic method and apparatus for measuring micron and submicron distances. 4,285,053, Cl. 367-99.000.
Kruer, Melvin R.: *See*—
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,284,962, Cl. 331-94.50F.
Krumbeck, Keith, to Cheney Company, Inc., The. Process for immersing in a swimming pool disabled persons using a wheelchair. 4,283,803, Cl. 4-496.000.
Kruschik, Julius, to Klinger AG. Valves for controlling or preventing fluid flow. 4,284,098, Cl. 137-219.000.
Kruse, Robert L.; and Wu, Wan C., to Monsanto Company. Process for dewatering a grafted rubber latex. 4,284,737, Cl. 525-243.000.
Ksienzyk, Klaus: *See*—
Forster, Hilmar; and Ksienzyk, Klaus, 4,284,311, Cl. 339-10.000.
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, to Yamanouchi Pharmaceutical Co., Ltd. Nitrogen-containing heterocyclic ring derivatives. 4,284,778, Cl. 546-115.000.
Kubota, Hitoshi; and Shimizu, Kazuaki, to Nissan Motor Company, Limited. Hydraulic pressure control valve assembly for automotive hydraulic brake system. 4,284,307, Cl. 303-6.00C.
Kubota, Yuichi, to TDK Electronic Co., Ltd. Magnetic recording medium and method of manufacturing the same. 4,284,684, Cl. 428-328.000.
Kudo, Hisashi, to Fuji Photo Film Co., Ltd. Device for continuously inspecting a surface. 4,284,357, Cl. 356-431.000.
Kuehn, Lorne A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Attitude indicator for divers. 4,283,798, Cl. 2-426.000.
Kugel, Christoph: *See*—
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,284,914, Cl. 310-68.00D.
Hagenlocher, Walter; Hesse, Heinz; Sohnle, Rudiger; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Kleebaur, Karl, 4,284,915, Cl. 310-68.00D.
Kuhn, Charles J. Floor safe. 4,284,014, Cl. 109-50.000.
Kuhn, S.A.: *See*—
Aron, Jerome, 4,283,904, Cl. 56-13.900.
Kuhnelt, Gert: *See*—
Plockinger, Erwin; Kuhnelt, Gert; and Machner, Peter, 4,284,123, Cl. 164-515.000.
Kulik, Alphonse C.; and Walter, Josef J., to USM Corporation. Shoe machine air blast mechanism and air blast safety device. 4,283,806, Cl. 12-142.00R.
Kulker, Otto, to Westfalia Separator AG. Self-dumping centrifugal separator drum. 4,284,233, Cl. 233-20.00A.
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, to Tokai TRW & Co. Ltd. Lean air-fuel mixture attraction method and attraction electrode plug in engine. 4,284,054, Cl. 123-536.000.
Kunkel, Heinrich: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.
Kunz, Johann: *See*—
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,284,914, Cl. 310-68.00D.
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Kurahashi, Koichiro; Nakajima, Yoshiro; and Mizutani, Yoshiki, to Mitsubishi Denki Kabushiki Kaisha. Ghost cancellation circuit system. 4,285,006, Cl. 358-35.000.

Kuriyama, Akimasa: *See*—
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.

Kuroda, Masataka: *See*—
Miyata, Shigeo; and Kuroda, Masataka, 4,284,762, Cl. 528-485.000.

Kurti, Mariann: *See*—
Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,284,642, Cl. 424-273.00R.

Kurzeba, Wieslaw: *See*—
Gruda, Zbigniew; and Kurzeba, Wieslaw, 4,283,923, Cl. 62-303.000.

Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, to Hitachi, Ltd. Polychromatic X-ray source for diffraction apparatus using polychromatic X-rays. 4,284,887, Cl. 250-272.000.

Kutsay, Ali U. Double shear beam strain gage load cell. 4,283,941, Cl. 73-862.660.

Kutzner, Luitpold: *See*—
Diermayer, Werner; and Kutzner, Luitpold, 4,284,235, Cl. 236-1.00G.

Kuzel, Maryann: *See*—
Leikhim, John W.; Gajewski, James M.; and Kuzel, Maryann, 4,284,532, Cl. 252-528.000.

Kwak, Solim S. W., to United States of America, Army. Conversion of CS (tear gas) to o-chlorostyrene and ammonium sulfate. 4,284,832, Cl. 570-190.000.

Kwong, Gary W. Y.; and Levy, Joseph, to UOP Inc. Additives for hydrocarbon oils. 4,284,415, Cl. 44-72.000.

Kyogoku, Yoshito: *See*—
Hashimoto, Hideyuki; Kyogoku, Yoshito; and Katada, Hiroshi, 4,284,046, Cl. 123-418.000.

Kyoto University, President of: *See*—
Eguchi, Wataru; Harada, Makoto; Tanigaki, Masataka; and Tada, Yutaka, 4,283,935, Cl. 73-15.00A.

Kyowa Chemical Industry Co., Ltd.: *See*—
Miyata, Shigeo; and Kuroda, Masataka, 4,284,762, Cl. 528-485.000.

Lacote, Jean-Claude: *See*—
Arnaison, Jean-Claude; and Lacote, Jean-Claude, 4,284,224, Cl. 227-9.000.

Lagerkvist, Conny B., to Nitro Nobel AB. Tubular container for viscous, viscous-elastic, plastic products as well as for powder or granular products. 4,284,196, Cl. 206-528.000.

Laing, Stuart B.; and Weingarten, Gordon G., to Glaxo Group Limited. Process for the preparation of cephalosporin compounds. 4,284,766, Cl. 544-22.000.

Laing, Stuart B.: *See*—
Humber, David C.; Laing, Stuart B.; and Weingarten, Gordon G., 4,284,767, Cl. 544-22.000.

Lal, Joginder; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Rubber composites suitable for tire sidewalls from hexadiene polymer. 4,284,535, Cl. 260-4.00R.

Lan, Shih-jung: *See*—
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,284,624, Cl. 424-177.000.

Lancaster, James F.: *See*—
Burlage, Donald W.; and Lancaster, James F., 4,285,059, Cl. 371-25.000.

Lancet, Michael S.; and Curran, George P., to Conoco Inc. Synthetic CO_2 acceptor. 4,284,528, Cl. 252-443.000.

Landau, Darrell W., to United States of America, Air Force. Digital position transducer including variable tuning element oscillator. 4,284,961, Cl. 331-65.000.

Lang, Werner: *See*—
Haas, Karl-Heinz; and Lang, Werner, 4,284,106, Cl. 138-147.000.

Lantzsch, Reinhard: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,284,643, Cl. 424-282.000.

Lapeyre, Fernand S. Bicycle transmission. 4,283,969, Cl. 74-810.000.

Laporte Industries Limited: *See*—
Eveson, Geoffrey F.; and Scruby, Alan W., 4,284,879, Cl. 219-383.000.

Lapshin, Evgeny I.: *See*—
Iosifian, Andronik G.; Fotin, Vladilen P.; Bondaletov, Vladimir N.; Lapshin, Evgeny I.; Ostrovsky, Alexandr S.; and Savchenko, Alexandr I., 4,284,927, Cl. 315-340.000.

Larson, Richard S.; and Packman, Allan B., to United Technologies Corporation. Gas turbine noise suppressor. 4,284,170, Cl. 181-213.000.

Larsson, Hans-Gunnar: *See*—
Brunosson, Gunnar; Larsson, Hans-Gunnar; and Westman, Erik, 4,284,393, Cl. 425-7.000.

Laser Technology, Inc.: *See*—
Newman, John W., 4,283,952, Cl. 73-579.000.

Lauridsen, Ole M.: *See*—
Hansen, Carl C.; and Lauridsen, Ole M., 4,284,085, Cl. 128-784.000.

Lavau, Rene C. Endless conveyor with locally varying speeds. 4,284,191, Cl. 198-792.000.

Lavigne, Maurice E.: *See*—
Szybicki, Edmund; and Lavigne, Maurice E., 4,284,852, Cl. 179-18.0EA.

Lay, Larry D. Vehicle for the physically handicapped. 4,284,157, Cl. 180-65.00R.

Leach, W. Marshall, Jr.; and Schafer, Ronald W., to Georgia Tech Research Institute. Time doman measurement of moving coil loudspeaker driver parameters. 4,284,860, Cl. 179-175.10A.

Lear Siegler, Inc.: *See*—
Brouwer, Gerald A., 4,284,186, Cl. 198-415.000.
May, Gordon M., 4,283,847, Cl. 29-832.000.
Pareja, Ramon, 4,284,392, Cl. 418-225.000.

Lechner, Karl; and Bosmiller, Erich, to Motoren-und Turbinen-Union. Method of detecting the onset of cracking in articles during dynamic testing. 4,283,956, Cl. 73-799.000.

Lechner, Robert, to Siemens Aktiengesellschaft. Telecommunication subscriber line access circuit with ground key indication and a device for call signal generation. 4,284,853, Cl. 179-18.0HB.

Lectron Products, Inc.: *See*—
Slavin, Michael; Rea, Irvin B.; and Todd, George S., 4,284,857, Cl. 179-115.00R.

Lee, Chi-Long: *See*—
Homan, Gary R.; and Lee, Chi-Long, 4,284,539, Cl. 260-18.00S.

Lee, Headie O., to Dow Corning Corporation. Closure and nozzle system for container for air-curable material. 4,284,213, Cl. 222-541.000.

Lee, Hsi L.: *See*—
Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., 4,284,557, Cl. 260-239.30B.

Lee, Kyu T., to Du Pont de Nemours, E. I., and Company. Antibacterials: 1-difluoromethyl-6,7-methylenedioxy-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid and its esters. 4,284,777, Cl. 546-90.000.

Lee, Len F.: *See*—
Howe, Robert K.; and Lee, Len F., 4,284,426, Cl. 71-90.000.

Lee, Robert G. H.: *See*—
Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, 4,284,510, Cl. 210-614.000.

Leffmann, (Paul) Harry, to Motorola Inc. Wide dynamic range pulse to pulse rate converter. 4,284,956, Cl. 328-140.000.

Legallasi, Lucien; Planquette, Guy; and Reynard, Remi, to Coflexip. Device to unroll and to roll up elongated flexible articles such as conduits or cables. 4,284,249, Cl. 242-54.00R.

Leikhim, John W.; Gajewski, James M.; and Kuzel, Maryann, to Procter & Gamble Company, The. Stable liquid detergent compositions. 4,284,532, Cl. 252-528.000.

Leland, Ragnvald G. Sock donning assist device. 4,284,216, Cl. 223-111.000.

Leland Stanford Jr. University, Board of Trustees of: *See*—
Gerzberg, Levy; and Meindl, James D., 4,285,001, Cl. 357-51.000.

Lemercier, Guy, to Commissariat a l'Energie Atomique. Structures for heat insulation of surfaces within a nuclear reactor. 4,284,474, Cl. 176-38.000.

Lemke, Werner: *See*—
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,284,914, Cl. 310-68.00D
Hagenlocher, Walter; Hesse, Heinz; Sohnle, Rudiger; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Kleebaur, Karl, 4,284,915, Cl. 310-68.00D.

Lemonon, Claire; Micheron, Francois; and Wang, Pierre, to Thomson-CSF. Polymeric piezoelectric transducer with thermoformed protuberances. 4,284,921, Cl. 310-328.000.

Lent, Roger S. Appliance anti-theft and protection circuitry. 4,284,983, Cl. 340-568.000.

Leonard, Allan S., to Ford Motor Company. Automatic transmission governor having deceleration sensitive pressure switching feature. 4,284,096, Cl. 137-48.000.

Leonard, David J.; and Leonard, Lanita. Kick ball game and apparatus kit therefor. 4,284,277, Cl. 273-411.000.

Leonard, Lanita: *See*—
Leonard, David J.; and Leonard, Lanita, 4,284,277, Cl. 273-411.000.

Leonard, Willie B. Fluidic repeater. 4,283,990, Cl. 91-47.000.

Leontiades, Kyriakos L., to International Business Machines Corp. Head image generator for a matrix printer. 4,284,001, Cl. 101-93.050.

Lermann, Peter: *See*—
Schroder, Rolf; Engelsmann, Dieter; Lermann, Peter; and Spinnler, Rainer, 4,284,342, Cl. 354-60.00E.

Lester, Victor E. Inhalation incentive device. 4,284,083, Cl. 128-725.000.

Lesyk, Joseph N., to Western Electric Co., Inc. Test heads having contact pairs. 4,284,314, Cl. 339-75.00M.

L'Etat Francais represente par le Delegue General pour l'Armement: *See*—
Arnaison, Jean-Claude; and Lacote, Jean-Claude, 4,284,224, Cl. 227-9.000.

Levasseur, Joseph L., to H. R. Electronics Company. Vend control system. 4,284,208, Cl. 221-129.000.

Levefelt, Bert G., to Sandvik Aktiebolag. Lubricating device. 4,284,151, Cl. 175-227.000.

Levin, Paul: *See*—
Brumbaugh, Owen E., Jr.; Levin, Paul; and Reed, Alston L., 4,284,380, Cl. 414-21.000.

Levy, Joseph: *See*—
Kwong, Gary W. Y.; and Levy, Joseph, 4,284,415, Cl. 44-72.000.

Lewallen, Charles D. Combination handtruck and portable work table. 4,284,286, Cl. 280-30.000.

Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier. Devices adapted to detect variations in magnetic flux notably circuit breakers. 4,285,022, Cl. 361-45.000.

Lewis, John G.: *See*—
Crow, William D.; and Lewis, John G., 4,284,864, Cl. 200-153.00V.

Lezard S.A.: *See*—
Bigarella, Federico, 4,284,199, Cl. 215-32.000.

Li, Tsi T.: *See*—
Arendt, Volker D.; and Li, Tsi T., 4,284,761, Cl. 528-373.000.

Liao, Paul F., to Bell Telephone Laboratories, Incorporated. Sensitive nonlinear optical spectroscopy. 4,284,354, Cl. 356-301.000.

Libbey-Owens-Ford Company: *See*—
Herliczek, Siegfried H., 4,284,677, Cl. 428-192.000.

Liebman, Israel; Corry, John; and Pro, Richard, to United States of America, Interior. Passive explosion barrier for mines. 4,284,144, Cl. 169-64.000.

Lieby, David G.: *See*—
DeLiban, Robert; and Lieby, David G., 4,284,160, Cl. 180-168.000.

Light, Steven D.: *See*—
Simpson, Howard D.; Gowdy, Hugh W.; and Light, Steven D., 4,284,531, Cl. 252-465.000.

Lin, Tz-Hong, to Medi-Physics, Inc. Esters useful as brain imaging agents. 4,284,619, Cl. 424-1.500.

Lin, Youlin; and Smith, Kenneth R., to Mallinckrodt, Inc. N-(2-Hydroxyethyl)-2,4,6-triiodo-3,5-bis-(2-keto-L-gulonamido)benzamide and radiological compositions containing same. 4,284,620, Cl. 424-5.000.

Lindahl, Lars: *See*—
Almqvist, Christer; and Lindahl, Lars, 4,284,135, Cl. 165-166.000.

Linde Aktiengesellschaft: *See*—
Forster, Franz H., 4,283,962, Cl. 74-42.000.

Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, to Gesellschaft fur Biotechnologische Forschung. Process for removing oils or petroleum from the surface of the sea. 4,284,509, Cl. 210-610.000.

Lingmann, Herbert; Drosdziok, Hermann; and Peifer, Rudolf, to Henkel Kommanditgesellschaft auf Aktien. Process for spray cleaning of metal surfaces. 4,284,434, Cl. 134-2.000.

Lipfert, Donald E., to Deres Development Corporation. Cushioning material construction. 4,283,864, Cl. 36-28.000.

Liqui-Box Corporation: *See*—
Schieser, Warren J.; and Vickers, Stanley E., 4,283,901, Cl. 53-75.000.

Lisfeld, Robert: *See*—
Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, 4,284,327, Cl. 350-87.000.

Little, William C.: *See*—
Applebaum, Melvin; De Pas, Len; and Little, William C., 4,283,871, Cl. 40-158.00R.

Litton Resources Systems, Inc.: *See*—
Bobbitt, John T., 4,285,052, Cl. 367-79.000.

Liu, Chong T., to Stauffer Chemical Company. Process for decreasing elemental phosphorus levels in an aqueous medium. 4,284,515, Cl. 210-724.000.

Lively, Steven A.; and Madden, Stephen K., to H. C. Price Co. Method and equipment for handling pipe mounted carriage. 4,284,385, Cl. 414-747.000.

Lockheed Corporation: *See*—
Blad, Leiv H.; and Griffin, Charles F., 4,284,679, Cl. 428-218.000.

Lockheed Electronics Co., Inc.: *See*—
Bigley, William J.; and Rizzo, Vincent J., 4,284,942, Cl. 318-618.000.

Loeb, Sidney, to Intertechnology/Solar Corporation. Utilization of saturated solar ponds. 4,283,913, Cl. 60-641.00A.

Loebner, Egon E.; and Greene, Paul E., to Hewlett-Packard Company. Method for making semiconductor material. 4,284,467, Cl. 156-613.000.

Logan, Ted J.; and King, Richard M., to Procter & Gamble Company, The. Fractionation of triglyceride mixture. 4,284,580, Cl. 260-428.500.

Loge, Olaf: *See*—
Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, 4,284,646, Cl. 424-305.000.

Lohse, Friedrich; Stockinger, Friedrich; and Eldin, Sameer H., to Ciba-Geigy Corporation. N-Substituted aspartic acid derivatives as curing agents for epoxide resins. 4,284,755, Cl. 528-111.000.

Loire, Rene: *See*—
Tuson, Samuel; and Loire, Rene, 4,284,367, Cl. 405-202.000.

Longsworth, Ralph C., to Air Products and Chemicals, Inc. Cryogenic air sampler. 4,283,948, Cl. 73-863.110.

Lonne, Klaus, to Goetze AG. Sealing gasket. 4,284,282, Cl. 277-235.00B.

Lorain Products Corporation: *See*—
Kalivas, Zissis, 4,285,023, Cl. 361-91.000.

Lorenz, Georg M.: *See*—
Bertram, Claus; and Lorenz, Georg M., 4,284,280, Cl. 277-27.000.

Lorenz, Horst: *See*—
Poque, Dionysius J.; and Lorenz, Horst, 4,284,117, Cl. 152-361.00R.

Losacker, Paul: *See*—
Schenk, Norbert; Krekel, Jorg; Losacker, Paul; and Swodenk, Wolfgang, 4,284,576, Cl. 260-369.000.

Loux, Edwin E. Device for supporting bicycle security chains and cables. 4,284,289, Cl. 280-289.00L.

Lowry, Elliot G.; and Forster, Lloyd N. Overheight vehicle detection and warning system. 4,284,971, Cl. 340-52.00R.

Lubrizol Corporation, The: *See*—
Bryant, Charles P., 4,284,414, Cl. 44-62.000.

Lucas Industries, Limited: *See*—
Wakeman, Anthony C., 4,284,055, Cl. 123-556.000.

Lucian, Anton: *See*—
Porter, Allan W. H.; and Lucian, Anton, 4,284,108, Cl. 139-448.000.

Lucik, Dennis M., to Johnson Rubber Company, The. Elastomeric composite pavement. 4,284,366, Cl. 404-44.000.

Lummus Company, The: *See*—
Sze, Morgan C., 4,284,781, Cl. 546-286.000.

Lunkenheimer, Winfried; Brandes, Wilhelm; and Kraus, Peter, to Bayer Aktiengesellschaft. Combating fungi with N-chloroacetyl-N-(2,6-disubstituted phenyl)-alanine esters. 4,284,791, Cl. 560-43.000.

Luteri, George F., to Velsicol Chemical Corporation. Method of increasing the recoverable sugar from sugar beets. 4,284,425, Cl. 71-27.000.

Lutz, Eugene F., to Shell Oil Company. Process for recovery of an aliphatic diol oligomerization solvent. 4,284,837, Cl. 585-523.000.

Lutz, William R., to Conceptual Factors, Inc. Backpacker's stove apparatus. 4,284,058, Cl. 126-9.00R.

Lynch, Gerard F.: *See*—
Allan, Colin J.; Shields, Ross B.; Cuttler, Jerry M.; and Lynch, Gerard F., 4,284,893, Cl. 250-390.000.

Lyon, Colin E.: *See*—
Sutcliffe, Peter W.; Isaacs, Jim W.; and Lyon, Colin E., 4,284,593, Cl. 264-0.500.

M.A.N. Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft: *See*—
Wildenrotter, Karl, 4,284,061, Cl. 126-418.000.

Machner, Peter: *See*—
Plockinger, Erwin; Kuhnelt, Gert; and Machner, Peter, 4,284,123, Cl. 164-515.000.

Madarasz nee Helesfai, Agnes: *See*—
Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef, 4,284,436, Cl. 148-2.000.

Madden, Stephen K.: *See*—
Lively, Steven A.; and Madden, Stephen K., 4,284,385, Cl. 414-747.000.

Maeda, Naoyuki: *See*—
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, 4,284,054, Cl. 123-536.000.

Maekawa, Hitoshi: *See*—
Osawa, Michitaka; Matsumoto, Syuzo; and Maekawa, Hitoshi, 4,285,008, Cl. 358-65.000.

Magel, Rolf, to Ernst Leitz Wetzlar GmbH. Circuit arrangement for the compensation of the temperature coefficient of semiconductor junctions. 4,284,334, Cl. 354-24.000.

Magyar Aluminiumipari Troszt: *See*—
Nagy, Ferenc; Szabo, Ferenc; and Szucs, Zoltan, 4,283,955, Cl. 73-772.000.

Mahoney, Morgan D. Swimming pool structure. 4,283,804, Cl. 4-506.00Q.

Maier, Erwin; Hirschmann, Wilhelm; and Willeitner, Eberhard, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Device for ducting gas in a centrifuge block. 4,284,231, Cl. 233-1.00R.

Maier, Roe J., Jr., to United States of America, Air Force. Self-determination of laser frequency. 4,284,964, Cl. 331-94.50S.

Maier, Thomas A., to Essex Group, Inc. Simplified electronic ignition timing and A/D conversion. 4,284,045, Cl. 123-416.000.

Maisch, Wolfgang, to Robert Bosch GmbH. Switching control apparatus for electromagnetic control units. 4,284,051, Cl. 123-490.000.

Makhteshim Chemical Works Ltd.: *See*—
Aelony, David, 4,284,826, Cl. 568-614.000.

Malhotra, Deepak: *See*—
Hoover, Maurice R.; Malhotra, Deepak; Bender, Fredrick N.; and Ronzio, Richard A., 4,284,244, Cl. 241-24.000.

Malkemes, Charles D.: *See*—
Jackson, Timothy; Malkemes, Charles D.; and Zipoy, William L., 4,284,362, Cl. 400-124.000.

Mallinckrodt, Inc.: *See*—
Lin, Youlin; and Smith, Kenneth R., 4,284,620, Cl. 424-5.000.

Manfredi, Urbano, to United States of America, Navy. Constant amplitude variable frequency synchronized linear ramp generator. 4,284,906, Cl. 307-228.000.

Manitowoc Company, Inc., The: *See*—
Morrow, James G., Sr., 4,284,265, Cl. 254-317.000.

Mansfield Carbon Products, Inc.: *See*—
Mansfield, Vaughn, 4,284,477, Cl. 202-110.000.

Mansfield, Vaughn, to Mansfield Carbon Products, Inc. Coking apparatus for producing coke. 4,284,477, Cl. 202-110.000.

Manthey, Joseph W.: *See*—
Fleming, James C.; Manthey, Joseph W.; and Brongo, Ralph T., 4,284,704, Cl. 430-154.000.

Manyo Tool: *See*—
Senzaki, Chikara, 4,284,374, Cl. 408-139.000.

Mar-Fam, Inc.: *See*—
Martinson, Charles M.; and Martinson, David J., 4,284,026, Cl. 114-230.000.

Marathon Oil Co.: *See*—
Sydansk, Robert D.; and Cordiner, Frank S., 4,284,140, Cl. 166-291.000.

Marben, Ronald D., to Thayer, Dennis M.; Marben, Ronald D.; DeJarlais, Ralph; and DeJarlais, Edward. Variable contour vice jaw. 4,284,267, Cl. 269-266.000.

March, Anthony; and Horton, Thomas E., to General Motors Corporation. Vehicle power seat adjuster control system. 4,284,935, Cl. 318-280.000.

Marchesi, Franco. Lubricant sealing device for sewing machines. 4,284,019, Cl. 112-256.000.

Margraf, Adolf. Cooler for hot smoke-laden gases. 4,284,131, Cl. 165-76.000.

Marhold, Albrecht: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,284,643, Cl. 424-282.000.

Mark Products, Inc.: *See—*
McNeel, William O., 4,285,054, Cl. 367-183.000.

Markomark B.V.: *See—*
Ockels, Egbert, 4,284,673, Cl. 428-54.000.

Marley, John. System and method for sound recognition. 4,284,846, Cl. 179-1.0SE.

Maromatic Co., Inc.: *See—*
Roland, Max G., 4,283,859, Cl. 33-174.00F.

Marquis, Edward T.; Watts, Lewis W., Jr.; and Gipson, Robert M., to Texaco Inc. Tungsten catalyzed aniline-formaldehyde condensation. 4,284,815, Cl. 564-332.000.

Marquis, Edward T.; and Watts, Lewis W., Jr., to Texaco Inc. Method of preparing polyaminopolyphenylmethanes. 4,284,816, Cl. 564-332.000.

Marshall, Harry A.: *See—*
Eakman, James M.; and Marshall, Harry A., 4,284,423, Cl. 62-28.000.

Marshall, Rolf F., to Port Authority of New York and New Jersey, The. Conveyance system. 4,284,010, Cl. 104-292.000.

Martin, David O.; and Martin, Lawrence G., to Martin Overhead Door and Electronics Co. Overhead door and overhead door section system and method. 4,284,119, Cl. 160-232.000.

Martin, Donald M.; and Rowe, Peter A., to Fisons Limited. Process for ammoniating phosphoric acid. 4,284,613, Cl. 423-310.000.

Martin, John K., to Investigacion Fic Fideicomiso. Neck ring assembly for automatic blow molding machines. 4,284,424, Cl. 65-241.000.

Martin, Lawrence G.: *See—*
Martin, David O.; and Martin, Lawrence G., 4,284,119, Cl. 160-232.000.

Martin Overhead Door and Electronics Co.: *See—*
Martin, David O.; and Martin, Lawrence G., 4,284,119, Cl. 160-232.000.

Martin, Pierre; and Bellus, Daniel, to Ciba-Geigy Corporation. Dichlorovinylcyclobutanones, processes for preparing them, and their use as intermediates for producing pesticidal compositions. 4,284,821, Cl. 568-381.000.

Martinson, Charles M.; and Martinson, David J., to Mar-Fam, Inc. Mooring device. 4,284,026, Cl. 114-230.000.

Martinson, David J.: *See—*
Martinson, Charles M.; and Martinson, David J., 4,284,026, Cl. 114-230.000.

Maruyama, Eiichi: *See—*
Nakano, Toshio; Kaneko, Tadao; Hashimoto, Michiaki; Hatano, Yoshio; Matsumaru, Haruo; Sasano, Akira; and Maruyama, Eiichi, 4,285,007, Cl. 358-44.000.

Maruyama, Keizo: *See—*
Sato, Takahisa; Nakanishi, Yoshiyuki; Maruyama, Keizo; and Suzuki, Takehiko, 4,284,571, Cl. 260-346.400.

Maruyama, Kunio, to Japan Exlan Company, Ltd.; and Sumitomo Chemical Company Limited. Process for the production of carbon fibers. 4,284,615, Cl. 423-447.400.

Maruyama, Mineo: *See—*
Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, 4,284,628, Cl. 424-230.000.

Maruzen Sewing Machine Co., Ltd.: *See—*
Matumura, Nobuyoshi, 4,284,016, Cl. 112-158.00E.

Maryland Cup Corporation: *See—*
Herbst, David H., 4,284,226, Cl. 229-1.50B.

Masaki, Tatuo: *See—*
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.

Maschinen- und Werkzeugbau GmbH: *See—*
Albrecht, Harald; and Schnettler, Roland, 4,284,179, Cl. 191-1.00A.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Chmela, Franz, 4,284,049, Cl. 123-467.000.
Hagin, Faust, 4,283,966, Cl. 74-572.000.
Maier, Erwin; Hirschmann, Wilhelm; and Willeitner, Eberhard, 4,284,231, Cl. 233-1.00R.
Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, 4,284,041, Cl. 123-193.00H.

Masclet, Jean; and Veaux, Jacques, to Messier-Hispano-Bugatti (SA). Shock absorbers and shock absorber struts, notably for aerodyne landing gear. 4,284,255, Cl. 244-102.00R.

Massachusetts Institute of Technology: *See—*
Pratt, George W., Jr.; Poss, Robert; and Chung, Jeremy K., 4,283,799, Cl. 3-1.913.

Masters, Joseph. Portable reel for power lines. 4,284,180, Cl. 191-12.20R.

Matsubara, Yoshinari: *See—*
Sato, Takeshi; and Matsubara, Yoshinari, 4,284,116, Cl. 152-360.000.

Matsumaru, Haruo: *See—*
Nakano, Toshio; Kaneko, Tadao; Hashimoto, Michiaki; Hatano, Yoshio; Matsumaru, Haruo; Sasano, Akira; and Maruyama, Eiichi, 4,285,007, Cl. 358-44.000.

Matsumoto, Seiji: *See—*
Kato, Hisatoyo; Matsumoto, Seiji; and Miyahara, Junji, 4,284,889, Cl. 250-355.000.

Matsumoto, Syuzo: *See—*
Osawa, Michitaka; Matsumoto, Syuzo; and Maekawa, Hitoshi, 4,285,008, Cl. 358-65.000.

Matsuo, Koichi: *See—*
Sakai, Toshiyuki; Matsuo, Koichi; and Naito, Shozo, 4,284,675, Cl. 428-116.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuichi, 4,284,696, Cl. 430-42.000.
Yoshimura, Yoshikazu, 4,284,967, Cl. 333-248.000.

Matsushita Electric Works, Ltd.: *See—*
Abura, Yoshinori; Ueda, Fumiya; Morihara, Nobuyuki; and Kami, Tomohiro, 4,284,877, Cl. 219-222.000.
Iwanaga, Kouichi; and Kakumoto, Hiromi, 4,284,944, Cl. 320-48.000.

Matsuzaki, Osamu; Abe, Michio; Mitobe, Koichi; and Tanno, Seikichi, to Hitachi, Ltd. Method of manufacturing color picture tubes. 4,284,662, Cl. 427-68.000.

Matsuzawa, Takashi: *See—*
Takami, Katsumi; and Matsuzawa, Takashi, 4,285,055, Cl. 368-226.000.

Matty, Thomas C., to Westinghouse Electric Corp. Motor control apparatus and method. 4,284,930, Cl. 318-269.000.

Matumura, Nobuyoshi, to Maruzen Sewing Machine Co., Ltd. Multiple pattern sewing machine. 4,284,016, Cl. 112-158.00E.

Mawson, Maurice; and Jamieson, Alexander, to Messer Griesheim. Automatic adjustment of the initial height of a flame cutter to a workpiece. 4,284,871, Cl. 219-121.0PV.

May, Gordon M., to Lear Siegler, Inc. Circuit board assembly. 4,283,847, Cl. 29-832.000.

Mayer, Cornelius: *See—*
Durrer, Jorg; and Mayer, Cornelius, 4,284,326, Cl. 350-63.000.

Mayer, Ferdy P. Antiparasitic ignition device for cars. 4,284,057, Cl. 123-633.000.

Mayerhoefer, Horst: *See—*
Hinsken, Hans; Mayerhoefer, Horst; and Mueller, Wolfgang, 4,284,790, Cl. 560-15.000.

Mayhall, Riley H.; and Zudal, Andrew. Package wrapping machine. 4,283,903, Cl. 53-587.000.

Mazzorana, Alfred B., to Societe de Paris et du Rhone. Actuator of an electrical starter. 4,283,961, Cl. 74-6.000.

McBrayer, Robert L.: *See—*
Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., 4,284,728, Cl. 521-155.000.

McCaskill, Matt L., to Alton Box Board Company. Reinforced pull sheet. 4,284,259, Cl. 248-346.000.

McClellan, William R.: *See—*
Anderson, Richard W.; Fahey, Robert J.; McClellan, William R.; and Schlener, J. Edward, 4,284,849, Cl. 179-5.00R.

McCluskey, James E., to Philadelphia Rivet Company. Floating solar pool heater. 4,284,060, Cl. 126-415.000.

McConnell, David P.; and Tully, Louis E., to McConnell, David P. Hydraulic fluid generator. 4,283,915, Cl. 60-650.000.

McCoy, Marshall W., to American Atomics Corporation. Self-luminous lighting system. 4,285,029, Cl. 362-84.000.

McDonald, William H.: *See—*
Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, 4,284,776, Cl. 544-400.000.

McDonnell Douglas Corporation: *See—*
Allen, Louis B., Jr.; Koenig, Herbert G., Jr.; and Rice, Robert R., 4,284,963, Cl. 331-94.50H.

McDowell, Jerry T., to Ball Corporation. Orienting and sizing battery grids and articles formed thereby. 4,284,693, Cl. 429-211.000.

McElroy, James D.: *See—*
Berrin, Lloyd; Cohen, Howard M.; Grupen, William B.; and McElroy, James D., 4,284,970, Cl. 338-195.000.

McHugh, William T.: *See—*
Goebel, Franz; and McHugh, William T., 4,284,691, Cl. 429-105.000.

McIntyre, Jack. Breech loading shotgun or the like. 4,283,873, Cl. 42-45.000.

McKaveney, James P., to Occidental Research Corp. Solar collectors with solar panels having a particulate ferro-alloy surface. 4,284,072, Cl. 126-901.000.

McKay, John; and Hawkins, Billy C. Heavy duty press. 4,283,825, Cl. 29-251.000.

McKeon, Edward F., to RCA Corporation. Switching network. 4,284,911, Cl. 307-252.00C.

McKinney, Robert W.: *See—*
Fennel, Robert H., III; and McKinney, Robert W., 4,284,725, Cl. 435-301.000.

McNeel, William O., to Mark Products, Inc. Geophone. 4,285,054, Cl. 367-183.000.

McNeilab, Inc.: *See—*
Anderson, Neal G.; and Carson, John R., 4,284,562, Cl. 260-326.200.

McPherson, James: *See—*
Stichling, Gerhardt C.; and McPherson, James, 4,283,987, Cl. 89-1.00B.

Means, Rodney J.: *See—*
Hepworth, Edward C.; and Means, Rodney J., 4,284,953, Cl. 328-37.000.

Meckel, Joachim F.: *See—*
Wagener, Dietrich; Flockenhaus, Claus; and Meckel, Joachim F., 4,284,476, Cl. 201-39.000.

Medi-Physics, Inc.: *See*—
Lin, Tz-Hong, 4,284,619, Cl. 424-1.500.

Medtronic B.V.Kerkrade: *See*—
Funke, Hermann D.; and Herpers, Lodewijk-Jozef, 4,284,082, Cl. 128-419.0PG.

Mehta, Gurmukh D., to Intertechnology/Solar Corporation. Liquid phase separation in absorption refrigeration. 4,283,918, Cl. 62-112.000.

Meindl, James D.: *See*—
Gerzberg, Levy; and Meindl, James D., 4,285,001, Cl. 357-51.000.

Meischen, Sandra J.; Gale, Glen R.; and Naff, Marion B., to United States of America, Health & Human Services. (N-Phosphonacetyl-L-aspartato)(1,2-diaminocyclchexane)platinum(II) or alkali metal salt. 4,284,579, Cl. 260-429.00R.

Meisterheim, Richard A.: *See*—
Hubbard, S. Eugene; Meisterheim, Richard A.; and Symon, Ernest B., 4,283,882, Cl. 49-141.000.

Melvin, Lawrence S., Jr.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,284,829, Cl. 568-764.000.

Memorex Corporation: *See*—
Scott, John C.; and Herrera, Raymond, 4,285,019, Cl. 360-103.000.

Menelly, Richard A. Flashlight assembly. 4,285,030, Cl. 362-200.00Q.

Merck & Co., Inc.: *See*—
Bollinger, Frederick W.; and Hazen, George G., 4,284,575, Cl. 260-349.000.
Ho, Sa V., 4,284,784, Cl. 548-202.000.

Mergel, Louis C., Jr. Thread chaser mechanism for a lathe. 4,283,972, Cl. 82-5.000.

Merikallio, Erkki; and Paloniemi, Paavo, to Oy Stromberg AB. Method for manufacturing a support construction for the winding in an electrical machine. 4,283,840, Cl. 29-596.000.

Merriam, Charles N.: *See*—
Kaufman, Lawrence G.; Merriam, Charles N.; and Pepe, Enrico J., 4,284,548, Cl. 260-38.000.

Merrick, James W., to Autotronic Controls Corp. Electronic engine control. 4,284,053, Cl. 123-497.000.

Meshberg, Emil, to Emson Research, Inc. Nibbed ferrule for holding cap. 4,284,211, Cl. 222-182.000.

Messer Griesheim: *See*—
Mawson, Maurice; and Jamieson, Alexander, 4,284,871, Cl. 219-121.0PV.

Messer, Leonard: *See*—
Capes, C. Edward; Thayer, William L.; Colemar., Richard D.; and Messer, Leonard, 4,284,413, Cl. 44-51.000.

Messier-Hispano-Bugatti (SA): *See*—
Masclet, Jean; and Veaux, Jacques, 4,284,255, Cl. 244-102.00R.

Messinger, Werner; Ullmann, Roland; and Schweingruber, Otto, to Braun Aktiengesellschaft. Dryshaver. 4,283,848, Cl. 30-34.100.

Metalfab Industries, Inc.: *See*—
Campbell, Michael D., 4,284,300, Cl. 292-251.000.

Metallurgie Hoboken-Overpelt: *See*—
van der Heyden, Andre; Coussement, Marc; and Van Peteghem, Antoine, 4,284,618, Cl. 423-605.000.

Metzeler Schaum GmbH: *See*—
Bokelmann, Horst, 4,284,398, Cl. 425-394.000.

Metzger, Karl G.: *See*—
Grohe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,284,629, Cl. 424-246.000.

Meyer, Jacques; and Bernelin, Daniel, to Rhone-Poulenc Industries. Cross-linkable saturated powderous compositions and powderous painting and coating compositions containing same. 4,284,745, Cl. 525-408.000.

Meyers, George, to Garber Company, The. Receptacle having frangible means. 4,284,197, Cl. 206-626.000.

Miba Sintermetall Aktiengesellschaft: *See*—
Willinger, Karl, 4,283,819, Cl. 29-79.000.
Willinger, Karl, 4,283,820, Cl. 29-79.000.

Michel, Edmond, to Solvay & Cie. (Societe Anonyme). Device for drawing thermoplastic preforms during the blow molding thereof. 4,284,397, Cl. 425-392.000.

Micheron, Francois: *See*—
Lemonon, Claire; Micheron, Francois; and Wang, Pierre, 4,284,921, Cl. 310-328.000.

Microcomputer Systems Corp.: *See*—
Gilovich, Paul A., 4,285,016, Cl. 360-84.000.

Midouhas, Stephen C. Solar heating system. 4,284,064, Cl. 126-429.000.

Mijs, Willem J.; Dusseau, Charles H. V.; and Sinnige, Hermannus J. M., to Akzona Incorporated. Preparation of triazinyl nitriles. 4,284,769, Cl. 544-180.000.

Milden, Martin J.; and Gordon, Stanley, to Hughes Aircraft Company. Method of making battery electrode structure. 4,283,844, Cl. 29-623.500.

Millan, Manuel: *See*—
Heiniger, Wilfred; Kreienbuhl, Claude; and Millan, Manuel, 4,283,863, Cl. 354-25.000.

Miller, Charlie D., to Carrier Corporation. Tube extracting mechanism. 4,283,826, Cl. 29-252.000.

Miller, Donald E.; and Gilmore, Cecilia, to SCM Corporation. Low-fat comestible spread substitutes. 4,284,655, Cl. 426-602.000.

Miller, Gerald W.: *See*—
Cancio, Leopoldo V.; Miller, Gerald W.; and Wu, Pai-Chuan, 4,284,671, Cl. 428-35.000.

Miller, Harold M.: *See*—
Newcomb, Paul D.; Davignon, Paul A.; and Miller, Harold M., 4,284,399, Cl. 425-410.000.

Miller, Kenneth G.: *See*—
DeBoer, Roy, Jr.; and Miller, Kenneth G., 4,284,590, Cl. 261-62.000.

Millick, William H., 3rd; and Newburg, Norman R., to Hercofina. Process for the manufacture of unsaturated polyester resins. 4,284,760, Cl. 528-306.000.

Milliken Research Corporation: *See*—
Cross, John P.; and Britton, George H., Jr., 4,284,729, Cl. 521-158.000.

Milton Roy Company: *See*—
Barnes, Lyle K.; and Barringer, Richard C., 4,284,487, Cl. 204-195.00S.

Minato, Andre H., to Societe d'Exploitation des Etablissements Minato S.O.D.E.E.M. Method and apparatus for stacking blocks to form a pallet having predetermined spaces therein. 4,284,381, Cl. 414-61.000.

Ministry of International Trade & Industry: *See*—
Satoh, Takehiko; Tsukahara, Sonoko; and Tsushima, Tachiro, 4,284,441, Cl. 148-120.000.

Minolta Camera Kabushiki Kaisha: *See*—
Ikeda, Hiroshi; and Sakurai, Seiichi, 4,284,346, Cl. 355-67.000.
Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Iizaka, Isao, 4,284,344, Cl. 355-14.00E.
Sugiyama, Takashi; Ogawa, Masaya; and Murasaki, Hiroshi, 4,284,345, Cl. 355-15.000.
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, 4,284,702, Cl. 430-122.000.
Yamada, Seiji, 4,284,341, Cl. 354-51.000.

Miraldi, Peter: *See*—
Gillis, John R.; Miraldi, Peter; and Stavers, Marius X., 4,284,600, Cl. 422-26.000.

Mitchell, Alvin L.: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.

Mitobe, Koichi: *See*—
Matsuzaki, Osamu; Abe, Michio; Mitobe, Koichi; and Tanno, Seikichi, 4,284,662, Cl. 427-68.000.

Mitsuba Electric Mfg. Co., Ltd.: *See*—
Kamiyama, Akira, 4,283,841, Cl. 29-597.000.

Mitsubishi Chemical Ind., Limited: *See*—
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiro; and Egawa, Mitsuo, 4,284,637, Cl. 424-267.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Ishii, Toshiaki; and Watanabe, Eiki, 4,284,175, Cl. 187-29.00R.
Kurahashi, Koichiro; Nakajima, Yoshiro; and Mizutani, Yoshiki, 4,285,006, Cl. 358-35.000.
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.

Mitsui Mining & Smelting Co., Ltd.: *See*—
Sakai, Toshiyuki; Matsuo, Koichi; and Naito, Shozo, 4,284,675, Cl. 428-116.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Takeda, Masami; and Nagano, Riichiro, 4,284,541, Cl. 260-27.00R.

Mitsui, Yoshihiro: *See*—
Shimodaira, Tadayoshi; and Mitsui, Yoshihiro, 4,284,002, Cl. 101-99.000.

Miyahara, Junji: *See*—
Kato, Hisatoyo; Matsumoto, Seiji; and Miyahara, Junji, 4,284,889, Cl. 250-355.000.

Miyano, Tadashi: *See*—
Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, 4,284,432, Cl. 106-73.200.

Miyaoka, Minoru: *See*—
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.

Miyata, Shigeo; and Kuroda, Masataka, to Kyowa Chemical Industry Co., Ltd. Method for inhibiting corrosion-causing tendency and coloration of halogen-containing olefin resins with hydrotalcite. 4,284,762, Cl. 528-485.000.

Miyazawa, Yoshihide: *See*—
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuichi, 4,284,696, Cl. 430-42.000.

Mize, Erbie G., to Astec Industries, Inc. Storage bin closure with liquid seal. 4,284,203, Cl. 220-345.000.

Mizuno, Shigeo: *See*—
Takeda, Nobuhiro; Hattori, Masaichi; and Mizuno, Shigeo, 4,284,295, Cl. 280-803.000.

Mizuno, Shioji; Enokimoto, Norio; and Oji, Kazuyoshi, to Dainippon Ink and Chemicals Inc. Flame retarding resin composition. 4,284,550, Cl. 260-40.00R.

Mizunoe, Hiroaki: *See*—
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, 4,284,702, Cl. 430-122.000.

Mizusawa, Akira, to Nifco Inc. Fastener for panels. 4,284,378, Cl. 411-21.000.

Mizutani, Yoshiki: *See*—
Kurahashi, Koichiro; Nakajima, Yoshiro; and Mizutani, Yoshiki, 4,285,006, Cl. 358-35.000.

Mobil Oil Corporation: *See*—
Chen, Catherine S. H.; and Sheppard, Edward W., 4,284,517, Cl. 252-8.55D.
Fahmy, Mohamed A., 4,284,626, Cl. 424-222.000.
Russo, Robert V., 4,284,733, Cl. 525-68.000.

Shihabi, David S., 4,284,529, Cl. 252-455.00Z.
Mochizuki, Seiji: *See*—
Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, 4,284,628, Cl. 424-230.000.
Modine Manufacturing Company: *See*—
Carravetta, James J.; and Robinson, Edward A., 4,284,669, Cl. 427-357.000.
Moeller, Wolfgang W. Ceiling tile system. 4,283,891, Cl. 52-144.000.
Moens, Joris, to N. V. Bekaert S. A. Reinforcing member for castable material and process of mixing reinforcing elements with said material. 4,284,667, Cl. 427-331.000.
Mohrle, Werner: *See*—
Suchowerskyj, Wadym; Werner, Peter; Schnurle, Hans; Mohrle, Werner; and Drews, Urlich, 4,284,050, Cl. 123-483.000.
Moked, Isaac; Handwerk, Richard H.; and Goettler, Hans J., to Union Carbide Corporation. Discrete spiral flow imparting device. 4,284,105, Cl. 138-42.000.
Moldenhauer, Don: *See*—
Engle, Carl E.; and Moldenhauer, Don, 4,284,246, Cl. 241-222.000.
Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,283,832, Cl. 29-434.000.
Monsanto Company: *See*—
Alt, Gerhard H.; and Chupp, John P., 4,284,564, Cl. 260-333.000.
Craig, James P., Jr., 4,284,598, Cl. 264-171.000.
Howe, Robert K.; and Lee, Len F., 4,284,426, Cl. 71-90.000.
Kruse, Robert L.; and Wu, Wan C., 4,284,737, Cl. 525-243.000.
Montez, Delfino C. Boat with canted wing fins. 4,284,027, Cl. 114-273.000.
Montgomery, Jon A. Multi-hull boat. 4,284,024, Cl. 114-61.000.
Montreal Neurological Institute: *See*—
Thompson, Christopher J., 4,284,890, Cl. 250-363.00S.
Mookherjee, Braja D.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.
Moore, Charles E.; Moore, Donald K.; and Moore, James M. Casement window security guard. 4,283,881, Cl. 49-35.000.
Moore, Donald K.: *See*—
Moore, Charles E.; Moore, Donald K.; and Moore, James M., 4,283,881, Cl. 49-35.000.
Moore, Herbert E.: *See*—
Flanders, Thomas E.; and Moore, Herbert E., 4,284,979, Cl. 340-359.000.
Moore, James M.: *See*—
Moore, Charles E.; Moore, Donald K.; and Moore, James M., 4,283,881, Cl. 49-35.000.
Moore, Sanders H.; and Adams, John O., to Olin Corporation. Heat sealing untreated sulfonamide-type cation exchange membranes. 4,284,460, Cl. 156-306.600.
Moos, Kurt; and Buschor, Karl, to Gema AG. Pneumatic conveyor of adjustable conveyance capacity for powdered to granular bulk material. 4,284,032, Cl. 118-684.000.
Morey, Booker W.: *See*—
Moudgil, Brij M.; and Morey, Booker W., 4,284,499, Cl. 209-166.000.
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., to Morgan, Ira Lon; and Sudarshan, E. C. George. Method and apparatus for tomographic examination of an object by penetrating radiation. 4,284,895, Cl. 250-445.00T.
Morgan, Ira Lon: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.
Mori, Shigeru; and Sakitani, Katsumi, to Daikin Kogyo Co., Ltd.; and Nippon Electric Company Limited. Cooling system. 4,285,027, Cl. 361-385.000.
Mori, Yoshihisa, to Sony Corporation. Phonograph record player. 4,284,279, Cl. 369-63.000.
Mori, Yoshio: *See*—
Inokuchi, Norio; Fukumoto, Teruhisa; and Mori, Yoshio, 4,284,596, Cl. 264-45.300.
Morihara, Nobuyuki: *See*—
Abura, Yoshinori; Ueda, Fumiya; Morihara, Nobuyuki; and Kami, Tomohiro, 4,284,877, Cl. 219-222.000.
Morikubo, Kunio: *See*—
Nagasawa, Kohtaro; Morikubo, Kunio; and Satoh, Tsutomu, 4,284,707, Cl. 430-196.000.
Morin, Thomas J. Apparatus and method for generating a continuously-formed mandrel as a supportive base. 4,284,455, Cl. 156-190.000.
Morita, Yutaka: *See*—
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.
Moriya, Yoshiaki: *See*—
Kitagawa, Yukio; and Moriya, Yoshiaki, 4,285,036, Cl. 364-200.000.
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,285,038, Cl. 364-200.000.
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Morris, Hugh C.: *See*—
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,284,182, Cl. 192-4.00A.
Morrison, Eric F.; and Zank, Anthony E., to Ampex Corporation. Total raster error correction apparatus and method for the automatic set up of television cameras and the like. 4,285,004, Cl. 358-10.000.
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Bucovaz, Edsel T.; Morrison, John C.; Whybrew, Walter D.; and Tarnowski, Stanley J., Jr., 4,284,552, Cl. 260-112.00R.
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Peters, Thomas E.; and Bleymaier, Joseph S., 4,284,595, Cl. 264-24.000.
Morrow, James G., Sr., to Manitowoc Company, Inc., The. Dual drive system for dragline with power interlock. 4,284,265, Cl. 254-317.000.
Morton-Norwich Products, Inc.: *See*—
Amirsakis, Charles J., 4,284,750, Cl. 528-79.000.
Moser, Vincent J.; and Slowik, Robert A., to Rohm and Haas. Polyurethane adhesive compositions containing dicyclopentenyloxyalkyl (meth) acrylate. 4,284,731, Cl. 525-28.000.
Motohashi, Katsuichi: *See*—
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuichi, 4,284,696, Cl. 430-42.000.
Motoren-und Turbinen-Union: *See*—
Lechner, Karl; and Bosmiller, Erich, 4,283,956, Cl. 73-799.000.
Motorola, Inc.: *See*—
Gaicki, Stanley, 4,285,003, Cl. 357-81.000.
Hepworth, Edward C.; and Means, Rodney J., 4,284,953, Cl. 328-37.000.
Leffmann, (Paul) Harry, 4,284,956, Cl. 328-140.000.
Patterson, Garvin W.; and Stehr, Wolfgang G., 4,285,039, Cl. 364-200.000.
Prinisl:i, David J., 4,285,065, Cl. 455-158.000.
Wanat, Ronald J., 4,284,966, Cl. 333-202.000.
Mott, James D., to Hydril Company. Subsurface well apparatus and method. 4,284,141, Cl. 166-315.000.
Moudgil, Brij M.; and Morey, Booker W., to Occidental Research Corporation. Apparatus for the float concentration of ore. 4,284,499, Cl. 209-166.000.
Mueller, Wolfgang: *See*—
Hinsken, Hans; Mayerhoefer, Horst; and Mueller, Wolfgang, 4,284,790, Cl. 560-15.000.
Muhleisen, Bruno, to TBT Tiefbohrtechnik GmbH & Co. One-lip tool for deep drilling. 4,284,375, Cl. 408-226.000.
Muller, Arno, to Pitney Bowes Inc. Electronic postage meter operating voltage variation sensing system. 4,285,050, Cl. 364-900.000.
Muller, Hartwig: *See*—
Grimmer, Eberhard; Kessler, Gunther; and Muller, Hartwig, 4,283,926, Cl. 66-75.200.
Muller, Walter: *See*—
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,284,411, Cl. 8-506.000.
Mulvany, Richard B.; and Patel, Tulsidas R., to International Business Machines Corporation. Disk file. 4,285,018, Cl. 360-98.000.
Murakami, Masuo: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.
Muraki, Katsuo: *See*—
Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, 4,285,032, Cl. 362-224.000.
Muramoto, Kenichi: *See*—
Fuse, Noboru; Muramoto, Kenichi; Tani, Keizo; and Iwanishi, Masaaki, 4,284,998, Cl. 357-22.000.
Murasaki, Hiroshi: *See*—
Sugiyama, Takashi; Ogawa, Masaya; and Murasaki, Hiroshi, 4,284,345, Cl. 355-15.000.
Murayama, Hirokazu: *See*—
Tokunaga, Masaaki; Hagi, Chitoshi; and Murayama, Hirokazu, 4,284,440, Cl. 148-31.570.
Murayama, Kashiwa, to Japan Crown Cork Co., Ltd. Method of producing an easily openable container closure having a shell and a sealing member. 4,284,023, Cl. 113-116.0QA.
Murkens, David W. Precision surface gage. 4,284,257, Cl. 248-125.000.
Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., to General Electric Company. Method of fabricating composite nozzles for water cooled gas turbines. 4,283,822, Cl. 29-156.80H.
Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, to ITT Industries, Inc. Device for adjusting the inclination of motor vehicle headlamps. 4,284,903, Cl. 307-10.0LS.
Muxworthy, Allan S.: *See*—
Collier, David S.; and Muxworthy, Allan S., 4,284,127, Cl. 165-35.000.
N. V. Bekaert S. A.: *See*—
Moens, Joris, 4,284,667, Cl. 427-331.000.
Nacional de Ceramica, S.A.: *See*—
Icaran, Andres A. Y., 4,283,802, Cl. 4-353.000.
Naff, Marion B.: *See*—
Meischen, Sandra J.; Gale, Glen R.; and Naff, Marion B., 4,284,579, Cl. 260-429.00R.
Nagahisa, Eizo: *See*—
Shigeoka, Ritsuo; Nagahisa, Eizo; and Yamauchi, Takafumi, 4,284,653, Cl. 426-312.000.
Nagano, Riichiro: *See*—
Takeda, Masami; and Nagano, Riichiro, 4,284,541, Cl. 260-27.00R.
Nagasawa, Kohtaro; Morikubo, Kunio; and Satoh, Tsutomu, to Somar Manufacturing Co., Ltd. Photocurable light-sensitive composition. 4,284,707, Cl. 430-196.000.

Nagati, Rashed N., to Pennsylvania Engineering Corporation. Metallurgical vessel capable of receiving fluids in separate flow paths while pivoting. 4,284,266, Cl. 266-246.000.

Nagel, Erich; Ziegler, Franz; and Schaner, Ferdinand, to Agfa-Gevaert Aktiengesellschaft. Apparatus for breaking weakened portions of running webs or the like. 4,284,221, Cl. 225-100.000.

Nagy, Ferenc; Szabo, Ferenc; and Szucs, Zoltan, to Magyar Aluminiumipari Troszt. Method of and measuring apparatus for determining the standard tensile yield point under load conditions. 4,283,955, Cl. 73-772.000.

Nahas, Nicholas C., to Exxon Research & Engineering Co. Integrated coal drying and steam gasification process. 4,284,416, Cl. 48-197.00R.

Naito, Shozo: *See*—
Sakai, Toshiyuki; Matsuo, Koichi; and Naito, Shozo, 4,284,675, Cl. 428-116.000.

Nakagawa, Kazuhiko: *See*—
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.

Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, to Nippon Kayaku Kabushiki Kaisha. 2-Hydroxy benzamide derivatives and use thereof as a fungicide. 4,284,628, Cl. 424-230.000.

Nakajima, Yoshiro: *See*—
Kurahashi, Koichiro; Nakajima, Yoshiro; and Mizutani, Yoshiki, 4,285,006, Cl. 358-35.000.

Nakamura, Akira; and Oguri, Masato, to Toyota Jidosha Kogyo Kabushiki Kaisha. Booster. 4,283,911, Cl. 60-547.00R.

Nakamura, Hideo: *See*—
Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,283,930, Cl. 72-8.000.

Nakamura, Kazuhiko: *See*—
Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, 4,284,897, Cl. 250-461.00B.

Nakamura, Yoshiharu, to Nissan Motor Company Limited. Mounting structure for the front side edge of a roof finisher of a vehicle. 4,284,304, Cl. 296-201.000.

Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,284,044, Cl. 123-307.000.

Nakanishi, Yoshiyuki: *See*—
Sato, Takahisa; Nakanishi, Yoshiyuki; Maruyama, Keizo; and Suzuki, Takehiko, 4,284,571, Cl. 260-346.400.

Nakano, Kazuo: *See*—
Ishibashi, Norio; and Nakano, Kazuo, 4,284,876, Cl. 219-216.000.

Nakano, Toshio; Kaneko, Tadao; Hashimoto, Michiaki; Hatano, Yoshio; Matsumaru, Haruo; Sasano, Akira; and Maruyama, Eiichi, to Hitachi, Ltd. Color solid-state imager and method of making the same. 4,285,007, Cl. 358-44.000.

Nakayama, Takao: *See*—
Inoue, Eiichi; and Nakayama, Takao, 4,284,703, Cl. 430-142.000.

Nalley, David J., to Singer Company, The. Sabre saw with rotatable saw bar. 4,283,855, Cl. 30-394.000.

Namiki, Ryoichi; Higashi, Yuichiro; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, to Richo Company Ltd. Heat roller fixing apparatus. 4,284,875, Cl. 219-216.000.

Nanny, William C.: *See*—
Dickens, Luther I.; and Nanny, William C., 4,284,447, Cl. 156-78.000.

Narayan, Thirumurti; and Kan, Peter T., to BASF Wyandotte Corporation. Liquid carbodiimide- and uretonimine-isocyanurate-containing polyisocyanate compositions and microcellular foams made therefrom. 4,284,730, Cl. 521-160.000.

Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, to Hitachi, Ltd. Motor control apparatus with an improved thyristor chopper circuit. 4,284,934, Cl. 318-345.00C.

Natale, Peter J.: *See*—
Hansen, W. Peter; Hoffman, Robert A.; and Natale, Peter J., 4,284,355, Cl. 356-335.000.

Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides. 4,284,624, Cl. 424-177.000.

National Machinery Company, The: *See*—
Kline, Gaylen O., 4,283,974, Cl. 83-42.000.

National Research Development Corporation: *See*—
Alldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., 4,284,351, Cl. 356-28.500.
Henry, Robert M., 4,285,046, Cl. 364-728.000.

National Starch and Chemical Corporation: *See*—
Stanley, Henry; and Ray-Chaudhuri, Dilip K., 4,284,572, Cl. 260-347.400.

Nau, Walter: *See*—
Carstensen, Jes-Ernst; and Nau, Walter, 4,284,156, Cl. 180-24.020.

Nautical Interiors Corporation: *See*—
Porter, Charles A.; and Kozak, James M., 4,284,305, Cl. 297-452.000.

NCR Corporation: *See*—
Horst, William R., 4,284,715, Cl. 430-395.000.

Neefe, Charles W., to Neefe Optica Lab Inc. Injection molding of optical lenses and optical molds. 4,284,591, Cl. 264-1.100.

Neefe, Charles W. Continuous wear hydratable, boilable methylmethacrylate copolymer contact lens. 4,284,749, Cl. 526-304.000.

Neefe Optica Lab Inc.: *See*—
Neefe, Charles W., 4,284,591, Cl. 264-1.100.

Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Anthraquinone derivatives for pigmenting organic macromolecular substances. 4,284,411, Cl. 8-506.000.

Neher, Hans, to J. Hengstler K.G. Digit wheel counter. 4,284,881, Cl. 235-1.00C.

Neidleman, Saul L.; Amon, William F., Jr.; and Geigert, John, to Cetus Corporation. Preparation of epoxides and glycols from gaseous alkenes. 4,284,723, Cl. 435-123.000.

Nelson, Donald A. Air conditioner and heat dispenser. 4,284,128, Cl. 165-48.00R.

Nelson, Donald A., to General Electric Co. Dynamoelectric machine stator assembly. 4,284,920, Cl. 310-217.000.

Nemoto, Sadao: *See*—
Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, 4,284,887, Cl. 250-272.000.

Neumann, Klaus: *See*—
Sitte, Hellmuth; Neumann, Klaus; Kleber, Heinrich; and Hassig, Helmut, 4,284,894, Cl. 250-443.000.

Newburg, Norman R.: *See*—
Millick, William H., 3rd; and Newburg, Norman R., 4,284,760, Cl. 528-306.000.

Newcomb, Paul D.; Davignon, Paul A.; and Miller, Harold M., to American Optical Corporation. Contact lens mold. 4,284,399, Cl. 425-410.000.

Newcombe, Clive V., to U.S. Philips Corporation. Temperature-compensated control valve. 4,284,263, Cl. 251-129.000.

Newman, John W., to Laser Technology, Inc. Flaw detecting device and method. 4,283,952, Cl. 73-579.000.

Newton, William A. Coating apparatus and method. 4,284,495, Cl. 209-3.100.

Newton, William A. Particle guiding apparatus and method. 4,284,496, Cl. 209-3.300.

Niagara Bottle Washer Manufacturing Co., a division of The Salangmack Company: *See*—
Vamvakas, Michael, 4,284,189, Cl. 198-647.000.

Nice, Gerald W. Belt-carried notebook and holster. 4,284,220, Cl. 224-242.000.

Nicholas, Richard F., to Rockwell International Corporation. Apparatus and method for aligning fine wire for thermal bonding. 4,283,834, Cl. 29-468.000.

Nicholson, Gordon E., to Rockwell International Corporation. Throttle force detector. 4,284,865, Cl. 200-157.000.

Nicholson, Margie M., to Rockwell International Corporation. Dichroic transducer. 4,284,858, Cl. 179-121.00R.

Nicolet Instrument Corporation: *See*—
Vidrine, Drouet W.; and Peterson, Paul E., 4,284,949, Cl. 324-315.000.

Nifco Inc.: *See*—
Mizusawa, Akira, 4,284,378, Cl. 411-21.000.
Tanaka, Toshie, 4,283,816, Cl. 24-269.000.

Nihon Electronic Industry Co., Ltd.: *See*—
Shimizu, Tadayuki, 4,284,445, Cl. 156-64.000.

Nihon Pillow Block Mfg. Co.: *See*—
Yoshida, Hajime; Aoki, Takashi; and Nishida, Kei, 4,284,353, Cl. 356-240.000.

Niina, Akihiko: *See*—
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.

Nill, Eberhard: *See*—
Brunn, Otto; and Nill, Eberhard, 4,285,013, Cl. 358-248.000.

Nilsson, Hans J.: *See*—
Agerhem, Halina; and Nilsson, Hans J., 4,284,719, Cl. 435-18.000.

Nilsson, Jan-Erik: *See*—
Pupp, Herwig; Andersson, Otto B.; and Nilsson, Jan-Erik, 4,284,448, Cl. 156-86.000.

Ninomiya, Kunihiro: *See*—
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiro; and Egawa, Mitsuo, 4,284,637, Cl. 424-267.000.

Nippon Electric Company, Limited: *See*—
Araseki, Takashi, 4,284,859, Cl. 179-170.0NC.
Mori, Shigeru; and Sakitani, Katsumi, 4,285,027, Cl. 361-385.000.
Yoshida, Yasuharu; Tagashira, Yoshimi; and Yokoyama, Seijiro, 4,285,062, Cl. 375-20.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, 4,284,628, Cl. 424-230.000.

Nippon Kogaku K.K.: *See*—
Ohtsubo, Yoshiaki; and Watanabe, Sakuji, 4,284,340, Cl. 354-50.000.
Takemae, Mikio; and Tanaka, Hiroaki, 4,284,335, Cl. 354-25.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Tate, Masahisa; Yoshiwara, Tetsuya; and Kobatake, Tatsuo, 4,284,214, Cl. 222-590.000.

Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See*—
Sato, Takahisa; Nakanishi, Yoshiyuki; Maruyama, Keizo; and Suzuki, Takehiko, 4,284,571, Cl. 260-346.400.

Nippon Suisan Kabushiki Kaisha: *See*—
Shigeoka, Ritsuo; Nagahisa, Eizo; and Yamauchi, Takafumi, 4,284,653, Cl. 426-312.000.

Nippon Telegraph & Telephone Public Corp.: *See*—
Odaka, Kazumi, 4,284,975, Cl. 340-146.30J.

Nippon Zeon Co., Ltd.: *See—*
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.

Nippondenso Co., Ltd.: *See—*
Ishida, Hideo; and Sukurai, Yasuhiko, 4,284,974, Cl. 340-81.00R.

Nischwitz, Ehrenfried; and Dursch, Walter, to Hoechst Aktiengesellschaft. Process for the pretreatment of cellulose fibers to be printed according to the thermotransfer printing method. 4,284,410, Cl. 8-471.000.

Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, to Tokyo Shibaura Electric Co. Ltd. Ceramic powder material and method for manufacturing the same. 4,284,432, Cl. 106-73.200.

Nishida, Kei: *See—*
Yoshida, Hajime; Aoki, Takashi; and Nishida, Kei, 4,284,353, Cl. 356-240.000.

Nishiguchi, Hisanori: *See—*
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuichi, 4,284,696, Cl. 430-42.000.

Nishikawa, Masaji, to Olympus Optical Company Ltd. Corona charger. 4,285,025, Cl. 361-230.000.

Nishimura, Shigeaki: *See—*
Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, 4,284,721, Cl. 435-70.000.

Nishiyama, Toshiaki: *See—*
Kasai, Shigeo; Nishiyama, Toshiaki; and Kawada, Kiju, 4,283,978, Cl. 83-620.000.

Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Static induction transistor and its applied devices. 4,284,997, Cl. 357-22.000.

Nissan Motor Company, Limited: *See—*
Abo, Toshimi, 4,283,910, Cl. 60-39.28R.
Ishida, Takashi, 4,284,162, Cl. 180-296.000.
Komatsu, Mikiya; Takashima, Syuichi; and Suzuki, Syunsuke, 4,284,124, Cl. 164-314.000.
Kubota, Hitoshi; and Shimizu, Kazuaki, 4,284,307, Cl. 303-6.00C.
Nakamura, Yoshiharu, 4,284,304, Cl. 296-201.000.
Sugasawa, Fukashi, 4,284,056, Cl. 123-568.000.

Nitro Nobel AB: *See—*
Lagerkvist, Conny B., 4,284,196, Cl. 206-528.000.

Nix, Lothar H. W.; and Heinrich, John, to AMP Inc. Electrical connector. 4,284,320, Cl. 339-200.00R.

Nixon, Charles R., to Tough-Guard, Inc. Paint sealant with Teflon T.F.E. 4,284,668, Cl. 427-355.000.

Nixon, Eric, to Anchor Cap & Closure Corporation of Canada Ltd. Child proof cap. 4,284,201, Cl. 215-220.000.

NL Industries, Inc.: *See—*
Tetenbaum, Marvin T.; and Case, Barton C., 4,284,506, Cl. 210-321.400.

Noguti, Masaharu: *See—*
Sekiguchi, Kunio; and Noguti, Masaharu, 4,284,937, Cl. 318-388.000.

Noisette, Pierre: *See—*
Denoyelle, Serge; and Noisette, Pierre, 4,284,968, Cl. 335-176.000.

Nonaka, Yuji: *See—*
Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, 4,284,721, Cl. 435-70.000.

Nordlin, William F., to Auto Specialties Manufacturing Company. Hydraulic log splitter. 4,284,113, Cl. 144-193.00A.

North American Philips Corporation: *See—*
Rakocy, William J.; and Bellotti, Silvio, 4,283,979, Cl. 83-666.000.

North, Bernard F., to Sun Chemical Corp. Glyoxal/cyclic urea condensates. 4,284,758, Cl. 528-245.000.

North Carolina State University at Raleigh: *See—*
Brown, Rodney J.; Swaisgood, Harold E.; and Horton, Horace R., 4,284,553, Cl. 260-112.00R.

Northern Telecom, Inc.: *See—*
Adams, William J.; Wernet, William F.; and Haskins, Steve W., 4,284,855, Cl. 179-100.00C.

Northern Telecom Limited: *See—*
Dyment, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., 4,284,884, Cl. 250-205.000.
Hayward, Richard; Bottrill, John; and Dittburner, Robert C., 4,284,854, Cl. 179-84.0VF.
Szybicki, Edmund; and Lavigne, Maurice E., 4,284,852, Cl. 179-18.0EA.

Norton, David J., to Westinghouse Brake and Signal Company Limited. Sequential checking of railway control signals. 4,284,256, Cl. 246-5.000.

Norton, Don S., to Don Norton Manufacturing Co., Inc. Top-erected umbrella with cantilevered support. 4,284,095, Cl. 135-21.000.

November, Milton H., to International Telephone and Telegraph Corporation. Vibration densitometer assembly. 4,283,936, Cl. 73-32.00A.

Noyori, Ryoji, to Ono Pharmaceutical Co., Ltd. Lithiumaluminium hydride compounds. 4,284,581, Cl. 260-448.0AD.

Nye, LaVonne, to B & B Miniatures The Whimsey. Apparatus for pleating cloth. 4,284,215, Cl. 223-33.000.

O & K Orenstein & Koppel Aktiengesellschaft and Lorenz GmbH: *See—*
Bertram, Claus; and Lorenz, Georg M., 4,284,280, Cl. 277-27.000.

O. M. Edwards Company, Inc., The: *See—*
Remick, David W.; and Stankivitz, Charles J., Sr., 4,283,885, Cl. 49-466.000.

Obear, Robert F., to Western Gear Corporation. Workpiece conditioning grinder system. 4,283,886, Cl. 51-92.00R.

O'Brien, Anne: *See—*
Whittaker, Graham; and O'Brien, Anne, 4,284,783, Cl. 546-345.000.

Obrochta, Frank T.; and Disa, Ralph E., to United Technologies Corporation. Cambered core positioning for injection molding. 4,283,835, Cl. 29-527.600.

Occidental Petroleum Corp.: *See—*
Ore, Fernando, 4,284,614, Cl. 423-321.00S.

Occidental Research Corp.: *See—*
McKaveney, James P., 4,284,072, Cl. 126-901.000.
Moudgil, Brij M.; and Morey, Booker W., 4,284,499, Cl. 209-166.000.

Oce-Nederland B.V.: *See—*
Graswinckel, Julius V. C., 4,284,348, Cl. 355-75.000.

Ockels, Egbert, to Markomark B.V. Method of manufacturing a panel, provided with a frame foamed of synthetic material at least at one lateral face thereof, as well as a panel obtained through the method. 4,284,673, Cl. 428-54.000.

Odaka, Kazumi, to Nippon Telegraph & Telephone Public Corp. On-line pattern recognition system for hand-written characters. 4,284,975, Cl. 340-146.30J.

Ogawa, Junji. Convertible bucket attachment capable of excavation and clasping. 4,283,866, Cl. 37-117.500.

Ogawa, Junkichi; Tanaka, Mitsugu; and Yamada, Minoru, to Fuji Photo Film Co., Ltd. Method of forming a photographic image. 4,284,714, Cl. 430-364.000.

Ogawa, Masaya: *See—*
Sugiyama, Takashi; Ogawa, Masaya; and Murasaki, Hiroshi, 4,284,345, Cl. 355-15.000.

Oguchi, Toshihiko; Ishizawa, Akio; and Yoshida, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Polymer coated transition metal powder as electrostatic image toner. 4,284,700, Cl. 430-105.000.

Oguri, Masato: *See—*
Nakamura, Akira; and Oguri, Masato, 4,283,911, Cl. 60-547.00R.

O'Hanlon, Peter J.: *See—*
Rogers, Norman H.; and O'Hanlon, Peter J., 4,284,570, Cl. 260-345.70R.

Ohara, Katsunobu: *See—*
Ando, Yujiro; Shinohara, Yukimasa; and Ohara, Katsunobu, 4,284,697, Cl. 430-53.000.

Ohara, Yuji; and Ohnishi, Masahiro, to Fuji Photo Film Co., Ltd. Light beam scanner. 4,285,012, Cl. 358-293.000.

Ohmori, Akira, to Daikin Kogyo Co., Ltd. Perfluoroalkyl-substituted amines as epoxy resin curing agents. 4,284,746, Cl. 525-510.000.

Ohmori, Kaoru: *See—*
Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, 4,284,628, Cl. 424-230.000.

Ohmori, Masayuki: *See—*
Yamada, Sachiko; Ohmori, Masayuki; and Takayama, Hiroaki, 4,284,577, Cl. 260-397.200.

Ohmori, Taiji; and Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Antiskid brake device. 4,285,042, Cl. 364-426.000.

Ohnishi, Makoto, to Hitachi, Ltd. Digital adder circuit with a plurality of 1-bit adders and improved carry means. 4,285,047, Cl. 364-785.000.

Ohnishi, Masahiro: *See—*
Ohara, Yuji; and Ohnishi, Masahiro, 4,285,012, Cl. 358-293.000.

Ohnishi, Shumio, to Toyo Rubber Industry Co., Ltd., The. Tire tread. 4,284,115, Cl. 152-209.00R.

Ohno, Eiji; and Chikugo, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Method for the production of sintered powder ferrous metal preform. 4,284,431, Cl. 75-212.000.

Ohsaka, Yohnosuke: *See—*
Tohzuka, Takashi; and Ohsaka, Yohnosuke, 4,284,822, Cl. 568-399.000.

Ohta, Naoto: *See—*
Kawada, Shigeki; Fujioka, Yoshiki; and Ohta, Naoto, 4,284,932, Cl. 318-338.000.
Kawada, Shigeki; Fujioka, Yoshiki; Ohta, Naoto; and Koiwai, Yutaka, 4,284,939, Cl. 318-453.000.

Ohtsubo, Yoshiaki; and Watanabe, Sakuji, to Nippon Kogaku K.K. Temperature-compensated signal transmitting device. 4,284,340, Cl. 354-50.000.

Oji, Kazuyoshi: *See—*
Mizuno, Shioji; Enokimoto, Norio; and Oji, Kazuyoshi, 4,284,550, Cl. 260-40.00R.

Oka, Tateki: *See—*
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, 4,284,702, Cl. 430-122.000.

Okada, Wataru: *See—*
Fukuda, Hideki; Shiotani, Takeshi; and Okada, Wataru, 4,284,724, Cl. 435-255.000.

Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Iizaka, Isao, to Minolta Camera Kabushiki Kaisha. Electrophotographic density control. 4,284,344, Cl. 355-14.00E.

OKI Electric Industry Co., Ltd.: *See—*
Ishibashi, Norio; and Nakano, Kazuo, 4,284,876, Cl. 219-216.000.

Okuda, Yukio: *See—*
Kainuma, Hiroyuki; Okuda, Yukio; and Fujisawa, Yoshiaki, 4,283,920, Cl. 62-126.000.

Okumura, Takeshi: *See—*
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.

Okumura, Yoshiharu; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of tertiary alcohols. 4,284,831, Cl. 568-899.000.

Olin Corporation: *See—*
Moore, Sanders H.; and Adams, John O., 4,284,460, Cl. 156-306.600.

Oliver, Christopher J.: *See—*
Alldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., 4,284,351, Cl. 356-28.500.

Olmsted, John H., to RTE Corporation. High fire point dielectric insulating fluid having a flat molecular weight distribution curve. 4,284,522, Cl. 585-6.600.

Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., to Sandvik AB; and Aktiebolaget SKF. Rotary drill bit. 4,284,310, Cl. 308-8.200.

Olson, Dale E.: *See—*
Courtright, Burr; Olson, Dale E.; and Smolkowski, Alvin H., 4,284,240, Cl. 239-184.000.

Olson, Daniel R.; Orkin, Ona V.; and Webb, Karen K., to General Electric Company. Abrasion resistant silicone coated polycarbonate article. 4,284,685, Cl. 428-331.000.

Olson, John E., to Cascade Corporation. Apparatus for automatically depositing a load in a predetermined position. 4,284,384, Cl. 414-434.000.

Olson, Kenneth E.: *See—*
Tien, Hsuan L.; and Olson, Kenneth E., 4,284,771, Cl. 544-200.000.

Olsson, Erik G.: *See—*
Arnell, Claes G.; and Olsson, Erik G., 4,284,007, Cl. 102-477.000.

Olympus Optical Co., Ltd.: *See—*
Ikuno, Yuji, 4,284,338, Cl. 354-32.000.
Nishikawa, Masaji, 4,285,025, Cl. 361-230.000.
Sato, Masaaki, 4,285,020, Cl. 360-132.000.
Satoh, Ken, 4,285,014, Cl. 360-22.000.
Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, 4,284,897, Cl. 250-461.00B.

Omya S. A.: *See—*
Delfosse, Pierre; and Strauch, Dieter, 4,284,546, Cl. 260-29.60R.

Ondetti, Miguel A.; and Condon, Michael E., to E. R. Squibb & Sons, Inc. Amino acid derivatives. 4,284,779, Cl. 546-189.000.

Ondetti, Miguel A.; and Condon, Michael E., to E. R. Squibb & Sons, Inc. Amino acid derivatives. 4,284,780, Cl. 546-189.000.

Ondetti, Miguel A.: *See—*
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,284,624, Cl. 424-177.000.
Petrillo, Edward W., Jr.; and Ondetti, Miguel A., 4,284,561, Cl. 260-326.200.

Ono Pharmaceutical Co., Ltd.: *See—*
Noyori, Ryoji, 4,284,581, Cl. 260-448.0AD.

Onodera, Hideo: *See—*
Fujisaki, Hitoshi; Onodera, Hideo; and Toyomura, Yasuhiro, 4,284,912, Cl. 307-255.000.

Onodera, Keiichi; and Yamaura, Hiroshi, to Fuji Electric Co. Ltd. Rotary signal generator. 4,284,916, Cl. 310-70.00R.

Onstott, Darrell C.; and Onstott, Velma L. Weedless- multi-barb fish-hook. 4,283,877, Cl. 43-34.000.

Onstott, Velma L.: *See—*
Onstott, Darrell C.; and Onstott, Velma L., 4,283,877, Cl. 43-34.000.

Operating Systems, Inc.: *See—*
Bird, Richard M.; and Tu, Ju C., 4,285,049, Cl. 364-900.000.

OPI Ltd.: *See—*
Reaugh, Luther G., 4,284,153, Cl. 175-297.000.

Ore, Fernando, to Occidental Petroleum Corp. Process for production of high purity phosphoric acid from high alumina phosphate pebble rock. 4,284,614, Cl. 423-321.00S.

O'Rear, Jacques G.: *See—*
Griffith, James R.; and O'Rear, Jacques G., 4,284,747, Cl. 525-530.000.

Orkin, Ona V.: *See—*
Olson, Daniel R.; Orkin, Ona V.; and Webb, Karen K., 4,284,685, Cl. 428-331.000.

Ortho Diagnostics, Inc.: *See—*
Hansen, W. Peter; Hoffman, Robert A.; and Natale, Peter J., 4,284,355, Cl. 356-335.000.
Hansen, W. Peter; and Hoffman, Robert A., 4,284,412, Cl. 23-230.00B.

Ortho Pharmaceutical Corporation: *See—*
Hajos, Zoltan G., 4,284,565, Cl. 260-340.600.

Orthoplant Orthopadische Implantate GmbH & Co. KG: *See—*
Rehder, Gunther, 4,284,080, Cl. 128-305.000.

Ortner Freight Car Company: *See—*
Eagle, Joseph, 4,284,011, Cl. 105-310.000.

Ory, Pierre: *See—*
Scherrer, Norbert; and Ory, Pierre, 4,284,143, Cl. 166-350.000.

Osawa, Michitaka; Matsumoto, Syuzo; and Maekawa, Hitoshi, to Hitachi, Ltd. Color picture reproducing device. 4,285,008, Cl. 358-65.000.

Ostrovsky, Alexandr S.: *See—*
Iosifian, Andronik G.; Fotin, Vladilen P.; Bondaletov, Vladimir N.; Lapshin, Evgeny I.; Ostrovsky, Alexandr S.; and Savchenko, Alexandr I., 4,284,927, Cl. 315-340.000.

Otis Engineering Corporation: *See—*
Adams, James B., Jr., 4,284,152, Cl. 175-257.000.

Otsuka, Yasuhiro: *See—*
Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, 4,284,486, Cl. 204-195.00S.

Outboard Marine Corporation: *See—*
Baltz, Gene F.; and DuBois, Chester G., 4,284,040, Cl. 123-187.50R.

Outokumpu Oy: *See—*
Heimala, Seppo O.; and Tuovinen, Frans H., 4,284,665, Cl. 427-203.000.

Overman, David L.; and Johnson, Robert N., to United States of America, Army. Acceleration switch. 4,284,862, Cl. 200-61.45R.

Owen, Graham. Convertible ladder. 4,284,171, Cl. 182-22.000.

Owens-Corning Fiberglas Corporation: *See—*
Kane, John L., 4,284,395, Cl. 425-66.000.

Oxenreider, Terry; Duesterhoeft, Donald A.; and Erb, Edgar M., to General Battery Corporation. Method and apparatus for casting lead into plastic for side terminal batteries. 4,284,122, Cl. 164-98.000.

Oy Stromberg AB: *See—*
Merikallio, Erkki; and Paloniemi, Paavo, 4,283,840, Cl. 29-596.000.

Oy Wartsila AB: *See—*
Paakkunainen, Eero, 4,283,821, Cl. 29-129.000.

Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, to Sagami Chemical Research Center; Ajinomoto Co., Inc.; and Toyo Soda Mfg. Co., Ltd. Method for manufacturing dipeptides. 4,284,721, Cl. 435-70.000.

Paakkunainen, Eero, to Oy Wartsila AB. Method for producing fiber rolls. 4,283,821, Cl. 29-129.000.

Pacala, Theodore: *See—*
Davis, Leonard C.; Pacala, Theodore; and Sippel, George R., 4,284,658, Cl. 427-34.000.

Pace, Paul D. Four in one water hygiene dispenser. 4,284,078, Cl. 128-229.000.

Packaging Corporation of America: *See—*
Champlin, Charles L., 4,284,195, Cl. 206-427.000.

Packman, Allan B.: *See—*
Larson, Richard S.; and Packman, Allan B., 4,284,170, Cl. 181-213.000.

Paiella, Roberto: *See—*
Giuliani, Gian P.; and Paiella, Roberto, 4,284,743, Cl. 525-349.000.

Paloniemi, Paavo: *See—*
Merikallio, Erkki; and Paloniemi, Paavo, 4,283,840, Cl. 29-596.000.

PanCanadian Petroleum Limited: *See—*
Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., 4,284,360, Cl. 366-140.000.

Paper Converting Machine Company: *See—*
Spencer, Harvey J., 4,283,973, Cl. 83-23.000.

Papistok, Heinz; Reuter, Herbert; and Bachmann, Lothar, to Veb Werkzeugmaschinenkombinat "7. Oktober" Berlin. Spur gear hobbing machine. 4,284,376, Cl. 409-24.000.

Pareja, Ramon, to Lear Siegler, Inc. Roller pump with radial members. 4,284,392, Cl. 418-225.000.

Park, Sang M.: *See—*
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,284,521, Cl. 252-62.3BT.

Parker, Dane K.; and Steichen, Richard J., to Goodyear Tire & Rubber Company, The. Process for the removal of low level (ppm) halogenated contaminants. 4,284,516, Cl. 210-757.000.

Parker, Marshall M.: *See—*
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., 4,284,988, Cl. 340-726.000.

Parsons, Robert, to Texas Instruments Incorporated. Character display apparatus with facility for selectively expanding the height of displayed characters. 4,284,989, Cl. 340-731.000.

Partenheimer, Walter: *See—*
Darin, John K.; Partenheimer, Walter; and Figuly, Joseph D., 4,284,523, Cl. 252-420.000.

Patchett, David R.; Phipps, Warren J.; and Zaverzence, Harry, to Chrysler Corporation. Sealing type electrical connector. 4,284,312, Cl. 339-60.00R.

Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., to Kendall Company, The. Method for making a molded catheter. 4,284,459, Cl. 156-245.000.

Patel, Bhupendra C.: *See—*
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,284,084, Cl. 128-748.000.

Patel, Navinchandra K.: *See—*
Keller, Alex J.; Flowers, Thad; Williams, Joseph R.; and Patel, Navinchandra K., 4,283,909, Cl. 57-306.000.

Patel, Tulsidas R.: *See—*
Mulvany, Richard B.; and Patel, Tulsidas R., 4,285,018, Cl. 360-98.000.

Patterson, Garvin W.; and Stehr, Wolfgang G., to Motorola, Inc. Memory array selection mechanism. 4,285,039, Cl. 364-200.000.

Patterson, Paul C., to Pennzoil Company. Motor vehicle lubricating facility. 4,284,173, Cl. 184-1.500.

Paulson, Jerome T.; and Zylka, Lawrence C., to Veda, Inc. Material handling system. 4,284,371, Cl. 406-99.000.

Paxson, Timm E.: *See—*
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., 4,284,835, Cl. 585-277.000.

Payne, David A.; Park, Sang M.; and Jahnke, Otto C., to Ferro Corporation. Reduced alkaline earth metal powders and process for producing same. 4,284,521, Cl. 252-62.3BT.

Peck, David W.: *See—*
Boros, Eugene J.; and Peck, David W., 4,284,727, Cl. 521-28.000.

Pecoraro, Joseph M.: *See—*
Shaub, Harold; and Pecoraro, Joseph M., 4,283,940, Cl. 73-116.000.

Peifer, Rudolf: *See—*
Lingmann, Herbert; Drosdziok, Hermann; and Peifer, Rudolf, 4,284,434, Cl. 134-2.000.

Pelchat, M. Guy: *See—*
Cobb, Raymond F.; and Pelchat, M. Guy, 4,285,060, Cl. 375-1.000.

Pelin, Marcel, to Verdol S.A. Double twist spindle including a drive without contact between its plate and its stabilizer. 4,283,907, Cl. 57-58.760.
Pemberton, J. C. Random access valve. 4,284,103, Cl. 137-625.000.
Pembroke, Richard W.: *See—*
Plachy, Ivo T.; Clymer, Jack W.; and Pembroke, Richard W., 4,284,250, Cl. 242-68.300.
Pennsylvania Engineering Corporation: *See—*
Nagati, Rashed N., 4,284,266, Cl. 266-246.000.
Pennzoil Company: *See—*
Patterson, Paul C., 4,284,173, Cl. 184-1.500.
Pepe, Enrico J.: *See—*
Kaufman, Lawrence G.; Merriam, Charles N.; and Pepe, Enrico J., 4,284,548, Cl. 260-38.000.
Pergrale, Jean; and Jatteau, Michel, to U.S. Philips Corporation. Gamma camera. 4,284,891, Cl. 250-363.00S.
Perino, Didier: *See—*
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,285,022, Cl. 361-45.000.
Peripheral Dynamics, Inc.: *See—*
Schisselbauer, John C., 4,284,883, Cl. 235-474.00Q.
Permclip Products Corporation: *See—*
Corey, Joseph T., 4,284,227, Cl. 229-1.50R.
Perring, Dudley; Smith, Michael J.; and Randall, John P., to EMI-Varian Limited. Linear beam microwave amplifier having section comprising three resonant coupled circuits two of which are resonant cavities which interact with the beam. 4,284,922, Cl. 315-5.390.
Pessel, Leopold, to American Electronic Laboratories, Inc. Process for regenerating sulfur dioxide gas scrubbing solutions. 4,284,608, Cl. 423-242.000.
Peters, Thomas E.; and Bleymaier, Joseph S., to Morrison-Knudsen Forest Products Company, Inc. Orientation and deposition of fibers in the manufacture of fiberboard. 4,284,595, Cl. 264-24.000.
Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Halogen-containing unsaturated bis-esters and polymers and copolymers based on these esters. 4,284,732, Cl. 252-609.000.
Petersen, Paul S.; and Holdahl, Robert A., to Toolmark Co. Wood lathe tool. 4,284,111, Cl. 142-56.000.
Peterson, Francis C.; Barth, Gerald D.; and Slotten, Rodney O., to Illinois Tool Works Inc. Self-penetrating wallboard anchor. 4,283,986, Cl. 411-340.000.
Peterson, Paul E.: *See—*
Vidrine, Drouet W.; and Peterson, Paul E., 4,284,949, Cl. 324-315.000.
Petrillo, Edward W., Jr.; and Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Hydroxamic acid derivatives of mercaptoacyl amino acids. 4,284,561, Cl. 260-326.200.
Petro-Canada Exploration Inc.: *See—*
Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., 4,284,360, Cl. 366-140.000.
Petry, Kurt: *See—*
Connor, William R., Jr.; Hubele, Heinz; and Petry, Kurt, 4,284,020, Cl. 112-273.000.
Pettit, John E.; and Pettit, Thomas L. Hexagonal jogging platform. 4,284,271, Cl. 272-70.000.
Pettit, Thomas L.: *See—*
Pettit, John E.; and Pettit, Thomas L., 4,284,271, Cl. 272-70.000.
Petukhov, Vadim D.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,283,991, Cl. 91-299.000.
Petzoldt, Karl, to Schering, A.G. Process for the preparation of 19-hydroxy steroids of the androstane and pregnane series. 4,284,720, Cl. 435-58.000.
Peuler, Jacob D.: *See—*
Johnson, Garland A.; and Peuler, Jacob D., 4,284,587, Cl. 564-365.000.
Pfeil, Wolfgang: *See—*
Weigele, Reinhold; Pfeil, Wolfgang; and Purr, Horst, 4,284,005, Cl. 101-363.000.
Pfizer Inc.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,284,829, Cl. 568-764.000.
Philadelphia Rivet Company: *See—*
McCluskey, James E., 4,284,060, Cl. 126-415.000.
Phillips Petroleum Co.: *See—*
Knudsen, Ronald D.; and Fahey, Darryl R., 4,284,830, Cl. 568-779.000.
Uraneck, Carl A.; and Burleigh, John E., 4,284,741, Cl. 525-297.000.
Welch, Melvin B., 4,284,748, Cl. 526-119.000.
Phipps, Warren J.: *See—*
Patchett, David R.; Phipps, Warren J.; and Zaverzence, Harry, 4,284,312, Cl. 339-60.00R.
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., to Eastman Kodak Company. Photosensitive diazo salt compositions and lithographic plate comprising same. 4,284,705, Cl. 430-159.000.
Pierrat, Michel A., to Ferrofluidics Corporation. Linear drive shaft seal. 4,284,605, Cl. 422-249.000.
Pigott, Stanley W.; and Gregory, Peter, to BICC Limited. Continuous extrusion of metals. 4,283,931, Cl. 72-45.000.
Pinck, Peter: *See—*
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,284,088, Cl. 131-280.000.
Pinkstaff, Leo W. Microwave water heater. 4,284,869, Cl. 219-10.55A.
Pioneer Electronic Corporation: *See—*
Higashi, Ryozi; and Hirano, Hiroyuki, 4,284,965, Cl. 333-28.00T.
Piper, Bert W., to Piper, Bert William. Portable key seat cutter. 4,284,377, Cl. 409-259.000.
Piper, Bert William: *See—*
Piper, Bert W., 4,284,377, Cl. 409-259.000.
Pisacane, Frank J.: *See—*
Bowen, Richard E.; Robb, Robert A.; Dengel, Ottmar H.; Gotzmer, Carl; and Pisacane, Frank J., 4,284,617, Cl. 423-504.000.
Pitney Bowes Inc.: *See—*
Muller, Arno, 4,285,050, Cl. 364-900.000.
Plachy, Ivo T.; Clymer, Jack W.; and Pembroke, Richard W., to Telex Computer Products, Inc. Tape drive having an improved reel latch. 4,284,250, Cl. 242-68.300.
Planquette, Guy: *See—*
Legallasi, Lucien; Planquette, Guy; and Reynard, Remi, 4,284,249, Cl. 242-54.00R.
Platone, Edoardo: *See—*
Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,284,567, Cl. 260-345.100.
Plempel, Manfred: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Plempel, Manfred, 4,284,639, Cl. 424-269.000.
Plessey Australia Pty. Limited: *See—*
Tulloch, Gavin E., 4,284,169, Cl. 181-211.000.
Plessey Handel und Investments A.G.: *See—*
Appleby, David, 4,284,888, Cl. 250-338.000.
Plockinger, Erwin; Kuhnelt, Gert; and Machner, Peter, to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Arrangement for producing ingots of unalloyed and alloyed steels. 4,284,123, Cl. 164-515.000.
Plona, Thomas J., to Schlumberger Technology Corporation. Method and apparatus for determining a granularity property of a subsurface formation around a borehole. 4,283,953, Cl. 73-589.000.
Pneumafil Corporation: *See—*
Ford, David M.; and Setzer, Gary, 4,283,814, Cl. 19-159.00R.
Polska Akademia Nauk, Instytut Maszyn Przeplywowych: *See—*
Szewalski, Robert, 4,284,388, Cl. 416-223.00A.
Polysar Limited: *See—*
Hulme, Joseph M., 4,283,949, Cl. 73-864.340.
Pomares, Raul J.; Ruiz, Carl P.; and Simpson, Douglas H., to General Electric Company. Method for enhanced control of radioiodine in the production of fission product molybdenum 99. 4,284,472, Cl. 176-16.000.
Pope, J. Lee, Jr.; and Scott, James W., to Baxter Travenol Laboratories, Inc. Flexible membrane filter assembly. 4,284,505, Cl. 210-236.000.
Popendorf, William J., to University of California, The Regents of the. Cassette filter ejector. 4,284,383, Cl. 414-417.000.
Poque, Dionysius J.; and Lorenz, Horst. Steel belted radial ply tires with cap plies employing single yarn reinforcing elements. 4,284,117, Cl. 152-361.00R.
Port Authority of New York and New Jersey, The: *See—*
Marshall, Rolf F., 4,284,010, Cl. 104-292.000.
Porter, Allan W. H.; and Lucian, Anton, to Adolph Saurer Limited. Thread gripper. 4,284,108, Cl. 139-448.000.
Porter, Charles A.; and Kozak, James M., to Nautical Interiors Corporation. Apparatus for upholstering a vehicle chair. 4,284,305, Cl. 297-452.000.
Porter, Selby W.: *See—*
Edmonds, Byron P.; and Porter, Selby W., 4,284,306, Cl. 299-5.000.
Poss, Robert: *See—*
Pratt, George W., Jr.; Poss, Robert; and Chung, Jeremy K., 4,283,799, Cl. 3-1.913.
Pottier, Jacques, to Commissariat a l'Energie Atomique. Ion beam buncher—debuncher. 4,284,923, Cl. 315-5.510.
Power Systems Development Corporation: *See—*
Hoinski, Walter W., 4,284,980, Cl. 340-545.000.
PPG Industries Canada Ltd.: *See—*
Edmonds, Byron P.; and Porter, Selby W., 4,284,306, Cl. 299-5.000.
PPG Industries, Inc.: *See—*
Graham, Roy R., 4,284,538, Cl. 260-17.4ST.
Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, 4,284,776, Cl. 544-400.000.
Heilman, Richard A., 4,284,356, Cl. 356-429.000.
Prain, Hunter D.: *See—*
Durant, Graham J.; Emmett, John C.; Ganellin, Charon R.; and Prain, Hunter D., 4,284,640, Cl. 424-270.000.
Pratt, George W., Jr.; Poss, Robert; and Chung, Jeremy K., to Massachusetts Institute of Technology. Pre-coated body implant. 4,283,799, Cl. 3-1.913.
Pray, Edward R.: *See—*
Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., 4,284,728, Cl. 521-155.000.
Precision Metalsmiths, Inc.: *See—*
Horton, Robert A., 4,284,121, Cl. 164-520.000.
Precision Monolithics, Inc.: *See—*
Henneuse, Paul R., 4,285,051, Cl. 365-45.000.
Pressmaster A.B.: *See—*
Wiener, Hans, 4,283,933, Cl. 72-409.000.
Presti, Paolo: *See—*
Genevois, Jean L.; Falohi, Roberto; Costantini, Giovanni; and Presti, Paolo, 4,284,404, Cl. 432-37.000.

Preuss, Reinhard; Charlet, Egbert; Finkel, Peter; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Agents for protection against light. 4,284,621, Cl. 424-59.000.

Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, to Anic, S.p.A. Method for the cyclization of gamma-delta, or delta-epsilon unsaturated alcohols. 4,284,567, Cl. 260-345.100.

Prichard, Arthur W.; and Sharp, Francis B., to USM Corporation. Clamp type heater for back-part molding shoe machines. 4,284,874, Cl. 219-215.000.

Prigent, Raymond: *See*—
Hulot, Michel; and Prigent, Raymond, 4,284,892, Cl. 250-388.000.

Prime, Harley C.: *See*—
Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, 4,284,469, Cl. 159-28.00R.

Priniski, David J., to Motorola, Inc. Radio with audio graphic equalizer. 4,285,065, Cl. 455-158.000.

Pritchett, William C., to Atlantic Richfield Company. Coupling means for horizontal vibrator with tooth-like projections. 4,284,163, Cl. 181-113.000.

Pro, Richard: *See*—
Liebman, Israel; Corry, John; and Pro, Richard, 4,284,144, Cl. 169-64.000.

Procter & Gamble Company, The: *See*—
Gilbert, Lawrence A., 4,284,524, Cl. 252-99.000.
Leikhim, John W.; Gajewski, James M.; and Kuzel, Maryann, 4,284,532, Cl. 252-528.000.
Logan, Ted J.; and King, Richard M., 4,284,580, Cl. 260-428.500.

Products Research & Chemical Corp.: *See*—
Hutt, Jack W.; and Blanco, Fernando E., 4,284,751, Cl. 528-45.000.

Proffer, Charles L. Evaporative charge forming system incorporating air cooling means. 4,283,917, Cl. 62-7.000.

Progressive Dynamics, Inc.: *See*—
Hart, James A., 4,285,033, Cl. 362-295.000.

Prohaska, Hans: *See*—
Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, 4,284,903, Cl. 307-10.0LS.

Prosky, Howard S., to Electromedics, Inc. Control and alarm system for freezer case temperature. 4,283,921, Cl. 62-126.000.

Prost, Claude D. Swab holding tool. 4,283,809, Cl. 15-145.000.

Prov & Verktyg AB: *See*—
Wennerstrom, Karl F., 4,283,976, Cl. 83-301.000.

Pryor, Richard L.; and Heagerty, William F., to RCA Corporation. Folded-cascode amplifier arrangement with current mirror amplifier. 4,284,958, Cl. 330-253.000.

Pryor, Richard L.: *See*—
Heagerty, William F.; and Pryor, Richard L., 4,284,959, Cl. 330-253.000.

Psaltis, Demetri: *See*—
Casasent, David P.; and Psaltis, Demetri, 4,285,048, Cl. 364-822.000.

Pugach, Joseph, to Halcon Research and Development Corp. Process for the preparation of acetic anhydride. 4,284,585, Cl. 260-549.000.

Pugach, Joseph, to Halcon Research and Development Corp. Process for the preparation of acetic anhydride. 4,284,586, Cl. 260-549.000.

Pujado, Peter R., to UOP Inc. Ammoxidation process with external catalyst regeneration zone. 4,284,583, Cl. 260-465.00C.

Pullukat, Thomas J.; and Shida, Mitsuzo, to Chemplex Company. Polymerization catalyst. 4,284,527, Cl. 252-430.000.

Pupp, Herwig; Andersson, Otto B.; and Nilsson, Jan-Erik, to Tetra Pak International AB. Method and an arrangement for the manufacture of casings. 4,284,448, Cl. 156-86.000.

Purr, Horst: *See*—
Weigele, Reinhold; Pfeil, Wolfgang; and Purr, Horst, 4,284,005, Cl. 101-363.000.

Putetti, Anthony M., to Textron, Inc. Toggle-actuated punch stripper. 4,283,932, Cl. 72-345.000.

Pyles, Eliot T., to Bendix Corporation, The. Method of attaching a ball joint to a suspension member. 4,283,833, Cl. 29-441.00R.

Quad Environmental Technologies Corp.: *See*—
deVries, Egbert, 4,284,609, Cl. 423-242.000.

Quaker Oats Company, The: *See*—
Christensen, Edwin H., 4,284,652, Cl. 426-72.000.

Quermann, Thomas R., to Sperry Corporation. Gyroscope indexing drive mechanism. 4,283,960, Cl. 74-5.410.

R. Ideas, Inc.: *See*—
Rucker, John, 4,283,860, Cl. 33-277.000.

Rabago, Renato: *See*—
Salcido, Albert R.; and Rabago, Renato, 4,284,223, Cl. 227-5.000.

Rabinow, Jacob, to Hall & Myers, a part interest. Reflective lane marker for roadways. 4,284,365, Cl. 404-9.000.

Radin, Norman S.: *See*—
Brusilow, Saul W.; Batshaw, Mark L.; and Radin, Norman S., 4,284,647, Cl. 424-317.000.

Radl, Bruce M., to Eikonix Corporation. Laser beam recorder. 4,284,994, Cl. 346-108.000.

Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, to Hoechst Aktiengesellschaft. Antimalarial compositions. 4,284,627, Cl. 424-229.000.

Ragot, Claude, to Thomson-CSF. Switchable very-high-voltage direct-current power supply for capacitive load. 4,284,928, Cl. 315-375.000.

Ragsdale, Fred L. Bicycle lock. 4,284,290, Cl. 280-289.00L.

Rakocy, William J.; and Bellotti, Silvio, to North American Philips Corporation. Adjustable slicing blade assembly. 4,283,979, Cl. 83-666.000.

Ralph McKay Limited: *See*—
Veroef, Hendrikus M., 4,284,238, Cl. 238-349.000.

Randall, Cyril A.: *See*—
Becker, Bernard B.; Bowman, John K.; and Randall, Cyril A., 4,284,097, Cl. 137-218.000.

Randall, John P.: *See*—
Perring, Dudley; Smith, Michael J.; and Randall, John P., 4,284,922, Cl. 315-5.390.

Randell, Arthur A., to Coal Industry (Patents) Limited. Spray head. 4,284,242, Cl. 239-422.000.

Randtron: *See*—
Van Teslaar, David A., 4,284,409, Cl. 474-185.000.

Rane, Dinanath: *See*—
Daniels, Peter J. L.; and Rane, Dinanath, 4,284,764, Cl. 536-10.000.

Rao, Bhaskara M. L.; Eustace, Daniel J.; and Farcasiu, Dan, to Exxon Research & Engineering Co. Compositions for stabilizing electrolytes in Li/TiS_2 systems. 4,284,692, Cl. 429-194.000.

Rapolla, Theodore. Agglomerization system for intermixing edible ingredients. 4,284,359, Cl. 366-107.000.

Rappa, Leonard F. Portable chartholder and table. 4,283,869, Cl. 40-10.00D.

Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of producing cylinder heads, and cylinder head produced thereby. 4,284,041, Cl. 123-193.00H.

Rassomakhin, Klimenty E.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,283,991, Cl. 91-299.000.

Raty, Gary L. Decorative arch form. 4,283,894, Cl. 52-311.000.

Rauch, Harry W., Sr., to General Electric Company. Fiber reinforced ceramics produced without pressing or sintering using a slurry comprising a silicate and a powdered ceramic. 4,284,664, Cl. 427-180.000.

Ray-Chaudhuri, Dilip K.: *See*—
Stanley, Henry; and Ray-Chaudhuri, Dilip K., 4,284,572, Cl. 260-347.400.

Ray, Jon P. Simulated smoking device. 4,284,089, Cl. 131-270.000.

Raytheon Company: *See*—
Smith, Irl W.; and Dorschner, Terry A., 4,284,329, Cl. 350-375.000.

RCA Corporation: *See*—
Ahmed, Adel A. A., 4,284,945, Cl. 323-315.000.
Bell, Alan E., 4,285,056, Cl. 369-100.000.
del Rio, Eddy H., 4,284,033, Cl. 118-730.000.
Harper, Stanley A., 4,284,694, Cl. 430-23.000.
Heagerty, William F.; and Pryor, Richard L., 4,284,959, Cl. 330-253.000.
James, Edward A., 4,284,712, Cl. 430-312.000.
McKeon, Edward F., 4,284,911, Cl. 307-252.00C.
Pryor, Richard L.; and Heagerty, William F., 4,284,958, Cl. 330-253.000.

Rea, Irvin B.: *See*—
Slavin, Michael; Rea, Irvin B.; and Todd, George S., 4,284,827, Cl. 179-115.00R.

Reaugh, Luther G., to OPI Ltd. Hydraulic drill string jar. 4,284,153, Cl. 175-297.000.

Reed, Alston L.: *See*—
Brumbaugh, Owen E., Jr.; Levin, Paul; and Reed, Alston L., 4,284,380, Cl. 414-21.000.

Reese, Robert O.; Wieber, Karl R.; and Sholly, James A., to Envirotech Corporation. Method for controlling electric power supplied to corona generating electrodes in an electrostatic precipitator. 4,284,417, Cl. 55-2.000.

Regie Nationale des Usines Renault: *See*—
Brisabois, Roger; and Brut, Gerard, 4,284,183, Cl. 192-48.920.

Regueiro, William R., to General Motors Corporation. Data communications between fixed and moving terminals. 4,284,941, Cl. 318-587.000.

Rehder, Gunther, to Orthoplant Orthopadische Implantate GmbH & Co. KG. Apparatus for the working of a bone which is to be provided with a shell prosthesis. 4,284,080, Cl. 128-305.000.

ReHeat AB: *See*—
Almqvist, Christer; and Lindahl, Lars, 4,284,135, Cl. 165-166.000.

Reick, Franklin G., to Ebert, Michael. Stabilized hybrid lubricant. 4,284,518, Cl. 252-16.000.

Reick, Franklin G., to Ebert, Michael, a part interest. Halocarbon oil composition. 4,284,519, Cl. 252-16.000.

Reinink, Jan: *See*—
Engelhardt, Manfred; Reinink, Jan; de Vries, Jochem J.; and Tietjens, Eduard W., 4,283,849, Cl. 30-43.600.

Reinkensmeier, Horst: *See*—
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Reinsma, Harold L., to Caterpillar Tractor Co. Joint sealing structure. 4,284,281, Cl. 277-84.000.

Reiss, Hans-Jurgen. Portable searchlight. 4,285,031, Cl. 362-205.000.

Reiter, Norbert: *See*—
Dreyer, Klaus; Grewe, Hans; Kolaska, Johannes; and Reiter, Norbert, 4,284,687, Cl. 428-336.000.

Rekant, Uriel. Centrifuge. 4,284,234, Cl. 233-27.000.

Rello, Michael J., to Exxon Research & Engineering Co. Ribbon tensioning for a cartridge with flexible guides. 4,284,364, Cl. 400-234.000.

Remick, David W.; and Stankivitz, Charles J., Sr., to O. M. Edwards Company, Inc., The. Emergency release closure. 4,283,885, Cl. 49-466.000.

Remillieux, Jean, to Air Industrie. Declogging process for filtration installation and improved filtration installation. 4,284,419, Cl. 55-96.000.

Rempfler, Hermann: *See—*
Bohner, Beat; and Rempfler, Hermann, 4,284,566, Cl. 260-343.600.
Rendell, John S.; and Cahalan, Maurice J., to RTL Contactor Holding S.A. Extraction. 4,284,606, Cl. 423-6.000.
Renner Manufacturing: *See—*
Voelz, Richard F., 4,284,159, Cl. 180-140.000.
Research Corporation: *See—*
Andres, Ronald P., 4,284,418, Cl. 55-16.000.
Bucovaz, Edsel T.; Morrison, John C.; Whybrew, Walter D.; and Tarnowski, Stanley J., Jr., 4,284,552, Cl. 260-112.00R.
Wong, John L., 4,284,563, Cl. 260-330.300.
Research-Cottrell, Inc.: *See—*
Andrews, William W., 4,285,024, Cl. 361-160.000.
Research Institute for Medicine and Chemistry, Inc.: *See—*
Barton, Derek H. R.; and Hesse, Robert H., 4,284,558, Cl. 260-239.55R.
Respiratory Care, Inc.: *See—*
DeBoer, Roy, Jr.; and Miller, Kenneth G., 4,284,590, Cl. 261-62.000.
Reuland, Joachim, to Hauni-Werke Korber & Co. KG. Method and apparatus for producing an elongated wrapped rod from fibers, especially tobacco shreds. 4,284,087, Cl. 131-84.00C.
Reuter, Herbert: *See—*
Papistok, Heinz; Reuter, Herbert; and Bachmann, Lothar, 4,284,376, Cl. 409-24.000.
Rex, Donald K.: *See—*
Choberka, John M.; and Rex, Donald K., 4,284,363, Cl. 400-124.000.
Rey, Charles A., to Intersonics Incorporated. Acoustic levitation and methods for manipulating levitated objects. 4,284,403, Cl. 432-1.000.
Reynard, Remi: *See—*
Legallasi, Lucien; Planquette, Guy; and Reynard, Remi, 4,284,249, Cl. 242-54.00R.
Reynolds Metals Company: *See—*
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Rhone Poulenc Industries: *See—*
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Meyer, Jacques; and Bernelin, Daniel, 4,284,745, Cl. 525-408.000.
Rhone-Poulenc S.A.: *See—*
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Rice, Robert R.: *See—*
Allen, Louis B., Jr.; Koenig, Herbert G., Jr.; and Rice, Robert R., 4,284,963, Cl. 331-94.50H.
Richardson, Anthony C.: *See—*
Thelwall, Leslie A. W.; Hough, Leslie; and Richardson, Anthony C., 4,284,763, Cl. 536-4.000.
Richardson-Merrell Inc.: *See—*
Carr, Albert A.; and Farr, Robert A., 4,284,636, Cl. 424-267.000.
Richo Company Ltd.: *See—*
Namiki, Ryoichi; Higashi, Yuichiro; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, 4,284,875, Cl. 219-216.000.
Richtzenhain, Hermann: *See—*
Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,284,732, Cl. 252-609.000.
Ricoh Co., Ltd.: *See—*
Kakeno, Sadao, 4,284,993, Cl. 346-75.000.
Kazami, Takeo; Enomoto, Takamichi; Kato, Tatuya; and Fukagai, Toshio, 4,284,698, Cl. 430-59.000.
Shimomura, Shozo; and Kanno, Tadaaki, 4,284,347, Cl. 355-71.000.
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Rieben, Ralph E., to United States of America, Air Force. Low profile precision actuator. 4,284,254, Cl. 244-75.00R.
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Berwick, Martin A.; and Riecke, Edgar E., 4,284,699, Cl. 430-96.000.
Rifat, Sultan A. Frost-proof fire hydrant. 4,284,099, Cl. 137-296.000.
Rimkus, Hans-Georg, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig. Circuit for generating an audible signal in tape recorders at the tape end. 4,285,021, Cl. 360-137.000.
Rizzo, Vincent J.: *See—*
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Robb, Robert A.: *See—*
Bowen, Richard E.; Robb, Robert A.; Dengel, Ottmar H.; Gotzmer, Carl; and Pisacane, Frank J., 4,284,617, Cl. 423-504.000.
Robert Bosch GmbH: *See—*
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Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,284,914, Cl. 310-68.00D.
Hagenlocher, Walter; Hesse, Heinz; Sohnle, Rudiger; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Kleebaur, Karl, 4,284,915, Cl. 310-68.00D.
Maisch, Wolfgang, 4,284,051, Cl. 123-490.000.
Schelhas, Peter, 4,284,048, Cl. 123-453.000.
Stumpp, Gerhard, 4,284,047, Cl. 123-449.000.
Suchowerskyj, Wadym; Werner, Peter; Schnurle, Hans; Mohrle, Werner; and Drews, Urlich, 4,284,050, Cl. 123-483.000.
Wanner, Karl; and Bleicher, Manfred, 4,284,148, Cl. 173-109.000.
Roberts, Graham E. Take-off safety indicator for aircraft. 4,284,029, Cl. 116-300.000.
Robinson, Edward A.: *See—*
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Robinson, John W., Jr.: *See—*
Gillis, James P.; and Robinson, John W., Jr., 4,284,218, Cl. 224-42.060.
Robinson, Sam P.: *See—*
Solbakken, Age; Apffel, Fred P.; Robinson, Sam P.; and Hayes, Bobby L., 4,284,616, Cl. 423-461.000.
Roccaforte, Harry I., to Champion International Corporation. Boutique carton and carton blank. 4,284,193, Cl. 206-45.310.
Roche, William J.: *See—*
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Rockwell International Corporation: *See—*
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Nicholas, Richard F., 4,283,834, Cl. 29-468.000.
Nicholson, Gordon E., 4,284,865, Cl. 200-157.000.
Nicholson, Margie M., 4,284,858, Cl. 179-121.00R.
Rockwool Aktiebolaget: *See—*
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Rodger, Ian: *See—*
Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, 4,284,469, Cl. 159-28.00R.
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Rogalski, Lawrence D. Baseboard space heating, air conditioning and humidity control system. 4,284,129, Cl. 165-50.000.
Rogers, Norman H.; and O'Hanlon, Peter J., to Beecham Group Limited. Antibacterial compounds. 4,284,570, Cl. 260-345.70R.
Rohm and Haas: *See—*
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Rohner, Joachim: *See—*
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Rolf, Meinhard: *See—*
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Ronzio, Richard A.: *See—*
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Roscoe Brown Corporation: *See—*
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Rose, Andrew M.; Sordello, Frank J.; and Touchton, James J., to Sperry Corporation. Method and apparatus for locating a movable servo controlled member during position signal drop-out. 4,285,015, Cl. 360-78.000.
Rosenbauer, Hans-Gunter: *See—*
Aignesberger, Alois; Deppen, Jean-Pierre; and Rosenbauer, Hans-Gunter, 4,284,433, Cl. 106-90.000.
Rosenkranz, Hans J.: *See—*
Preuss, Reinhard; Charlet, Egbert; Finkel, Peter; and Rosenkranz, Hans J., 4,284,621, Cl. 424-59.000.
Rosenzweig, Walter, to Bell Telephone Laboratories, Incorporated. IGFET Bootstrap circuit. 4,284,905, Cl. 307-482.000.
Rowe, Denton C., to Electric Machinery Mfg. Company. Apparatus and method for controlling the speed of an induction motor in a closed-loop system. 4,284,943, Cl. 318-806.000.
Rowe International, Inc.: *See—*
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Rowe, Peter A.: *See—*
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RTE Corporation: *See—*
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RTL Contactor Holding S.A.: *See—*
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Rucker, John, to R. Ideas, Inc. Lens field of view simulator. 4,283,860, Cl. 33-277.000.
Ruiz, Carl P.: *See—*
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Russell, Richard H.: *See—*
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Russo, Robert V., to Mobil Oil Corporation. Thermoplastic composition containing a poly(methyl ethenyl benzene) resin and a poly(phenylene oxide) resin. 4,284,733, Cl. 525-68.000.
Ruyak, Robert F., to Autoclave Engineers, Inc. Magnetically actuated stopper valve. 4,284,262, Cl. 251-65.000.
Ryan, John O., to Ampex Corporation. Photo-feedback preamplifier circuit. 4,284,960, Cl. 330-300.000.
Rygajlo, Izydor, to Stamness, Delmer M. Adjustable stand. 4,284,293, Cl. 280-766.000.

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Fox, Derek J., 4,284,435, Cl. 134-2.000.
S.E.G. Resistor AB: *See*—
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Safinco: *See*—
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Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, 4,284,721, Cl. 435-70.000.
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Ikeda, Hiroshi; and Sakurai, Seiichi, 4,284,346, Cl. 355-67.000.
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Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, 4,284,887, Cl. 250-272.000.
Salcido, Albert R.; and Rabago, Renato. Device for stapling material on ceilings. 4,284,223, Cl. 227-5.000.
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Wiley, Roy O.; and Samborski, Bruce A., 4,284,318, Cl. 339-103.00C.
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Doswald, Paul, 4,284,554, Cl. 260-153.000.
Hinsken, Hans; Mayerhoefer, Horst; and Mueller, Wolfgang, 4,284,790, Cl. 560-15.000.
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Lal, Joginder; and Sandstrom, Paul H., 4,284,535, Cl. 260-4.00R.
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Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.
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Levefelt, Bert G., 4,284,151, Cl. 175-227.000.
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Takahashi, Haruo; and Kimura, Shougo, 4,283,997, Cl. 92-79.000.
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Kramer, Ulrich; and Chenevard, Alexis, 4,284,187, Cl. 198-435.000.
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Sato, Hiroshi; Fujisawa, Koiti; Tojima, Hideto; and Yasui, Seimei, to Sumitomo Chemical Company, Limited. Process for preparing hexamethyltetrahydronaphthalenes. 4,284,818, Cl. 568-323.000.
Sato, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for producing an image of an object scanned by ultrasonic wave beams. 4,285,011, Cl. 358-112.000.
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Ohmori, Taiji; and Sato, Makoto, 4,285,042, Cl. 364-426.000.
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Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, to Bridgestone Tire Co., Ltd.; and Kobe Steel, Ltd. Mixing and kneading machine. 4,284,358, Cl. 366-97.000.
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Sato, Takeshi; and Matsubara, Yoshinari, to Bridgestone Tire Co., Ltd. Pneumatic tire for motorcycles. 4,284,116, Cl. 152-360.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Type character selecting mechanism for printing head. 4,284,004, Cl. 101-111.000.
Satoh, Ken, to Olympus Optical Co., Ltd. Channel division recording-/reproducing apparatus. 4,285,014, Cl. 360-22.000.
Satoh, Takehiko; Tsukahara, Sonoko; and Tsushima, Tachiro, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for improvement of magnetic property of thin strip of amorphous alloy. 4,284,441, Cl. 148-120.000.
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Nagasawa, Kohtaro; Morikubo, Kunio; and Satoh, Tsutomu, 4,284,707, Cl. 430-196.000.
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Kaspar, Peter D.; and Satterfield, Carroll D., 4,284,400, Cl. 425-444.000.
Satu, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. 1,4-Dihydropyridine derivatives, and pharmaceutical method of the same. 4,284,634, Cl. 424-266.000.
Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtfischer, Gustav, to Warner-Lambert Company. 3-Pyrrolin-2-one derivatives and compositions. 4,284,632, Cl. 424-246.000.
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Saunders, Charles A., 4,283,829, Cl. 29-278.000.
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Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, to Canadian Liquid Air Ltd./Air Liquide Canada LTEE. Two zone process for biological treatment of waste water. 4,284,510, Cl. 210-614.000.
Savas, John. Aluminum base casting alloy. 4,284,429, Cl. 75-141.000.
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Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
Sawafuji Electric Co., Ltd.: *See*—
Kainuma, Hiroyuki; Okuda, Yukio; and Fujisawa, Yoshiaki, 4,283,920, Cl. 62-126.000.
Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, to Olympus Optical Company Ltd. Fluorescence determining microscope utilizing laser light. 4,284,897, Cl. 250-461.00B.
Sbuelz, Anes, to Societa Italiana Telecomunicazioni Siemens S.p.A. Sampling gate for TDM telecommunication system. 4,285,057, Cl. 370-112.000.
Scandrol, Roy O.: *See*—
Echtler, J. Paul; and Scandrol, Roy O., 4,283,954, Cl. 73-706.000.
Scapes, John N.; and Soos, Joseph S., to Gould Inc. Pipe mount manifold assembly. 4,284,100, Cl. 137-343.000.
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Schafer, Ronald W.: *See*—
Leach, W. Marshall, Jr.; and Schafer, Ronald W., 4,284,860, Cl. 179-175.10A.
Schaner, Ferdinand: *See*—
Nagel, Erich; Ziegler, Franz; and Schaner, Ferdinand, 4,284,221, Cl. 225-100.000.
Scharfenbergkupplung GmbH: *See*—
Forster, Hilmar; and Ksienzyk, Klaus, 4,284,311, Cl. 339-10.000.
Schatz, Friedrich; and Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshuette AG. Method for manufacturing heat exchanger tubing. 4,283,824, Cl. 29-157.400.
Schelhas, Peter, to Robert Bosch GmbH. Pressure control valve for a fuel injection system. 4,284,048, Cl. 123-453.000.
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Knupfer, Hans; and Schellhammer, Carl-Wolfgang, 4,284,787, Cl. 548-256.000.
Schenk, Norbert; Krekel, Jorg; Losacker, Paul; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Preparation of anthraquinone from tetrahydroanthraquinone. 4,284,576, Cl. 260-369.000.
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Petzoldt, Karl, 4,284,720, Cl. 435-58.000.
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Daniels, Peter J. L.; and Rane, Dinanath, 4,284,764, Cl. 536-10.000.
Gold, Elijah H.; and Chang, Wei K., 4,284,555, Cl. 260-239.0BB.
Scherrer, Norbert; and Ory, Pierre, to Societe Europeenne de Propulsion. System for the remote control, the maintenance or the fluid injection for a submerged satellite well head. 4,284,143, Cl. 166-350.000.

Schield, Vern L. Detachable differential for vehicle drive train. 4,284,158, Cl. 180-70.00R.
Schieser, Warren J.; and Vickers, Stanley E., to Liqui-Box Corporation. Continuous rotary machine for uncapping, filling and recapping flexible bags having separable caps. 4,283,901, Cl. 53-75.000.
Schilling, William F.: *See*—
Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., 4,283,822, Cl. 29-156.80H.
Schirmer, Henry G., to W. R. Grace & Co. Method for producing laminated film. 4,284,458, Cl. 156-244.120.
Schisselbauer, John C., to Peripheral Dynamics, Inc. Card reader with improved data processing timing control. 4,284,883, Cl. 235-474.00Q.
Schlegel Corporation: *See*—
Sterner, Maurice E., Jr., 4,283,883, Cl. 49-194.000.
Schlener, J. Edward: *See*—
Anderson, Richard W.; Fahey, Robert J.; McClellan, William R.; and Schlener, J. Edward, 4,284,849, Cl. 179-5.00R.
Schleyerbach, Rudolf: *See*—
Kammerer, Friedrich-Johannes; and Schleyerbach, Rudolf, 4,284,786, Cl. 548-248.000.
Schlumberger Technology Corporation: *See*—
Hertzog, Russel C., 4,284,886, Cl. 250-270.000.
Plona, Thomas J., 4,283,953, Cl. 73-589.000.
Schluter, Jurgen, to E. Schluter Fachhandel fur Schweisstechnik. Welding torch. 4,284,873, Cl. 219-136.000.
Schmelzer Corporation: *See*—
Benjamin, Benjamin C.; and Detweiler, Charles A., 4,284,261, Cl. 251-60.000.
Schmidt, Frank, to Cassella Aktiengesellschaft. Process for the manufacture of 6-hydroxypyrid-2-ones. 4,284,782, Cl. 546-288.000.
Schmidt, Horst; and Struck, Hans, to Windmoller & Holscher. Reclosable cross-bottom sack. 4,284,229, Cl. 229-57.000.
Schmidt, Ronald V.: *See*—
Carruthers, John R.; Kaminow, Ivan P.; and Schmidt, Ronald V., 4,284,663, Cl. 427-164.000.
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Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,284,819, Cl. 568-327.000.
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., to Bristol-Myers Company. Antitumor agents. 4,284,568, Cl. 260-345.200.
Schneckenburger, Donald R.: *See*—
Young, John E. G.; and Schneckenburger, Donald R., 4,284,389, Cl. 417-218.000.
Schneider, Fred J.: *See*—
Chayka, George A.; and Schneider, Fred J., 4,284,466, Cl. 156-583.100.
Schnettler, Roland: *See*—
Albrecht, Harald; and Schnettler, Roland, 4,284,179, Cl. 191-1.00A.
Schnitzer, Hans: *See*—
Gsponer, Arnold; and Schnitzer, Hans, 4,284,369, Cl. 406-52.000.
Schnurle, Hans: *See*—
Suchowerskyj, Wadym; Werner, Peter; Schnurle, Hans; Mohrle, Werner; and Drews, Urlich, 4,284,050, Cl. 123-483.000.
Schoener, Ronald C.: *See*—
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Scholl, Gerhardt; and Hofmann, Friedrich, to Saarberg-Hoelter Saarbergwerke A.G.; and Umweltstechnik GmbH. Process for preventing encrustations on surfaces which are in constant contact with aqueous solutions containing matter prone to crystallize. 4,284,513, Cl. 210-699.000.
Schon, Friedrich, to Kraftwerk Union Aktiengesellschaft. Control apparatus for purifying acumulated condensate. 4,284,501, Cl. 210-96.100.
Schoneberger, George H., Jr. Method and apparatus for indicating and adjusting the angular position of a sail. 4,283,943, Cl. 73-188.000.
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Detemple, Manfred; and Huebner, Horst, 4,284,321, Cl. 339-218.00M.
Schreck, Ronald: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.
Schreiber, Franz: *See*—
Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, 4,284,903, Cl. 307-10.0LS.
Schroder, Rolf; Engelsmann, Dieter; Lermann, Peter; and Spinnler, Rainer, to AGFA-Gevaert Aktiengesellschaft. Photographic camera with multi-purpose exposure-parameter adjuster. 4,284,342, Cl. 354-60.00E.
Schubert, Donald R. Corner brace for building construction. 4,283,900, Cl. 52-712.000.
Schubert, Karl-Friedrich: *See*—
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Schulte, Egon, to Didier Engineering GmbH. Sealing arrangement for the oven chamber door on a coking oven. 4,284,479, Cl. 202-248.000.
Schultz, Frank L. Mailing assembly incorporating plural offer send and return mailing pieces. 4,284,230, Cl. 229-73.000.
Schulz, Walther: *See*—
Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, 4,284,509, Cl. 210-610.000.
Schutze, Horst, to Vereinigte Flugtechnische Werke-Fokker GmbH. Climatizing of aircraft. 4,283,924, Cl. 62-402.000.
Schwarz, Norbert: *See*—
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Schweingruber, Otto: *See*—
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Schweitzer, Philip F.; and Shine, John R., to Bell Telephone Laboratories, Incorporated. Arrangement for frustrating fraudulent telephone calls. 4,284,851, Cl. 179-18.0DA.
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SCM Corporation: *See*—
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Scott, James W.: *See*—
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Scott, John C.; and Herrera, Raymond, to Memorex Corporation. Contoured magnetic recording head/slider assembly. 4,285,019, Cl. 360-103.000.
Scruby, Alan W.: *See*—
Eveson, Geoffrey F.; and Scruby, Alan W., 4,284,879, Cl. 219-383.000.
Scudder, Roy, to FMC Corporation. Top driven shaker units for harvesting machine. 4,283,906, Cl. 56-330.000.
Seeley, William M.: *See*—
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Seidenath, Hans: *See*—
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Seider, Murray. Video bow tie. 4,283,797, Cl. 2-151.000.
Seidler, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of complex compounds of the cobalt Phthalocyanine series. 4,284,560, Cl. 260-314.500.
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., to Burroughs Corporation. Control means to provide slow scrolling positioning and spacing in a digital video display system. 4,284,988, Cl. 340-726.000.
Sekiguchi, Kunio; and Noguti, Masaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Load current detecting apparatus of direct current motors. 4,284,937, Cl. 318-388.000.
Sekine, Jiro, to Fuji Photo Film Co., Ltd. Shutter mechanism for motion picture cameras. 4,284,332, Cl. 352-208.000.
Senften, David A., to Hager Hinge Company. Switch hinge. 4,284,861, Cl. 200-61.700.
Senzaki, Chikara, to Manyo Tool. Rotary tool holder. 4,284,374, Cl. 408-139.000.
Setzer, Gary: *See*—
Ford, David M.; and Setzer, Gary, 4,283,814, Cl. 19-159.00R.
Shaffer, Robert C., to Hitco. Polymers containing chemically bonded metal atoms. 4,284,744, Cl. 525-389.000.
Shaltis, Robert J.: *See*—
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Shaner, Jim. Liquid fertilizer distributor. 4,284,243, Cl. 239-469.000.
Sharp, Francis B.: *See*—
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Sharrow, John A., to Bendix Corporation, The. Failure monitor for crystal filters. 4,284,946, Cl. 324-56.000.
Shaub, Harold; and Pecoraro, Joseph M., to Exxon Research & Engineering Co. Method for deconditioning an engine used in fuel economy tests. 4,283,940, Cl. 73-116.000.
Shaw, Robert C.: *See*—
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Shaw, Seth T., Jr. IUD Arrangement. 4,284,074, Cl. 128-130.000.
Sheets, Jesse E.; Vitchus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., to Atlantic Richfield Company. Flame modifier to reduce NO_x emissions. 4,284,402, Cl. 431-9.000.
Shell Internationale Research Maatschappij B.V.: *See*—
Hill, Alistair C.; and Davies, Lyn, 4,283,878, Cl. 43-114.000.
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Hewitt, Ralph W., Jr., 4,284,753, Cl. 528-89.000.
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., 4,284,835, Cl. 585-277.000.
Lutz, Eugene F., 4,284,837, Cl. 585-523.000.
Syrier, Johannes L. M., 4,284,820, Cl. 568-374.000.
Sheppard, Edward W.: *See*—
Chen, Catherine S. H.; and Sheppard, Edward W., 4,284,517, Cl. 252-8.55D.
Sheptak, Nicholas, to American Can Company. Thermal insulation. 4,284,674, Cl. 428-69.000.
Sherif, Fawzy G., to Stauffer Chemical Company. Novel support for catalysts. 4,284,530, Cl. 252-455.00R.
Sherman, Anna H.: *See*—
Donaghy, Robert E.; and Sherman, Anna H., 4,284,660, Cl. 427-57.000.

Sherman, Richard H.: *See*—
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Shida, Mitsuzo: *See*—
Pullukat, Thomas J.; and Shida, Mitsuzo, 4,284,527, Cl. 252-430.000.
Shields, Ross B.: *See*—
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Shigeoka, Ritsuo; Nagahisa, Eizo; and Yamauchi, Takafumi, to Nippon Suisan Kabushiki Kaisha. Process for handling and processing fish meat. 4,284,653, Cl. 426-312.000.
Shigeta, Yoshihiro: *See*—
Kawamura, Masaharu; Shigeta, Yoshihiro; Uchidoi, Masanori; Sugiura, Yoji; and Yamamoto, Hiroshi, 4,284,333, Cl. 354-23.00D.
Shigetomi, Yasumasa. Composite anion adsorbent and method for making same. 4,284,726, Cl. 521-28.000.
Shihabi, David S., to Mobil Oil Corporation. Hydrocarbon conversion catalyst. 4,284,529, Cl. 252-455.00Z.
Shiiba, Kiyonori: *See*—
Sagara, Fumio; Kawabata, Hiroshi; and Shiiba, Kiyonori, 4,284,793, Cl. 560-78.000.
Shim, Kyung S.; and Skrzec, Adam E., to Stauffer Chemical Company. Process for preparing thiophenols. 4,284,817, Cl. 568-67.000.
Shimizu, Kazuaki: *See*—
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Shimizu, Tadayuki, to Nihon Electronic Industry Co., Ltd. Production quantity adjusting apparatus for corrugators. 4,284,445, Cl. 156-64.000.
Shimodaira, Tadayoshi; and Mitsui, Yoshihiro, to Kabushiki Kaisha Suwa Seikosha; and Shinsu Seiki Kabushiki Kaisha. Character-selecting mechanism for a printer. 4,284,002, Cl. 101-99.000.
Shimomura, Shozo; and Kanno, Tadaaki, to Ricoh Co., Ltd. Aperture-controlling device in a variable-scale photocopying machine. 4,284,347, Cl. 355-71.000.
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Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
Shine, John R.: *See*—
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Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Solid pole oxygen sensor and its manufacturing process. 4,284,486, Cl. 204-195.00S.
Shinohara, Yukimasa: *See*—
Ando, Yujiro; Shinohara, Yukimasa; and Ohara, Katsunobu, 4,284,697, Cl. 430-53.000.
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Shinta, Jouji: *See*—
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Shintani, Sotokichi: *See*—
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Shiozaki, Ryozi: *See*—
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Shittaka, Akio: *See*—
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Sholly, James A.: *See*—
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Shook, Norma G.: *See*—
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Shrunk, David G.: *See*—
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Shuto, Masamoto, to Japan Air Line Co., Ltd. Rigid trolley rail and method for laying the same. 4,284,181, Cl. 191-22.0DM.
Sides, Daniel H., to Black & Decker Inc. Retainer arrangement for tools. 4,284,284, Cl. 279-19.500.
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Garrett, Robert A.; Silva, John; and Allen, Craig R., 4,284,929, Cl. 318-51.000.
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Yokoyama, Nobuaki, 4,283,927, Cl. 66-78.000.
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Batson, William A., 4,283,977, Cl. 83-453.000.
Nalley, David J., 4,283,855, Cl. 30-394.000.
Szostak, Jan, 4,284,018, Cl. 112-217.400.
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Mijs, Willem J.; Dusseau, Charles H. V.; and Sinnige, Hermannus J. M., 4,284,769, Cl. 544-180.000.
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Davis, Leonard C.; Pacala, Theodore; and Sippel, George R., 4,284,658, Cl. 427-34.000.
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Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,284,683, Cl. 428-285.000.
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Shim, Kyung S.; and Skrzec, Adam E., 4,284,817, Cl. 568-67.000.
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Aignesberger, Alois; Deppen, Jean-Pierre; and Rosenbauer, Hans-Gunter, 4,284,433, Cl. 106-90.000.
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Doyle, Richard C., 4,284,317, Cl. 339-103.00R.
Slavin, Michael; Rea, Irvin B.; and Todd, George S., to Lectron Products, Inc. Tone generator. 4,284,857, Cl. 179-115.00R.
Slob, Arie, to U.S. Philips Corporation. Semiconductor device and method of manufacturing same. 4,283,837, Cl. 29-578.000.
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Moser, Vincent J.; and Slowik, Robert A., 4,284,731, Cl. 525-28.000.
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Smith, David A.: *See*—
Geiger, Herbert B.; and Smith, David A., 4,284,301, Cl. 294-104.000.
Smith, Francis C. Hydraulic cylinder for multilevel submersible safety deck or decks for pools. 4,283,801, Cl. 4-496.000.
Smith, Irl W.; and Dorschner, Terry A., to Raytheon Company. Laser gyroscope system. 4,284,329, Cl. 350-375.000.
Smith, Jesse C.: *See*—
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Lin, Youlin; and Smith, Kenneth R., 4,284,620, Cl. 424-5.000.
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Durant, Graham J.; Emmett, John C.; Ganellin, Charon R.; and Prain, Hunter D., 4,284,640, Cl. 424-270.000.
Smith, Layle V., to Dow Chemical Company, The. Efficient handling and charging system for expanded, low-density, loose-fill packaging material(s). 4,284,372, Cl. 406-106.000.
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Perring, Dudley; Smith, Michael J.; and Randall, John P., 4,284,922, Cl. 315-5.390.
Smith, Percy L.: *See*—
Comstock, Lowell R.; and Smith, Percy L., 4,284,736, Cl. 525-169.000.
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Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,284,556, Cl. 260-239.0BB.
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Courtright, Burr; Olson, Dale E.; and Smolkowski, Alvin H., 4,284,240, Cl. 239-184.000.
Snamprogetti S.p.A.: *See*—
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,284,526, Cl. 252-429.00C.
Sobczak, Marian. 45 Degree chamfer and radius gauge set. 4,283,858, Cl. 33-174.00R.
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Sbuelz, Anes, 4,285,057, Cl. 370-112.000.
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Mazzorana, Alfred B., 4,283,961, Cl. 74-6.000.
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Minato, Andre H., 4,284,381, Cl. 414-61.000.
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Scherrer, Norbert; and Ory, Pierre, 4,284,143, Cl. 166-350.000.
Societe pour l'Affranchissemert et le Timbrage Automatiques (S.A.T.A.S.): *See*—
Tollet, Marcel, 4,284,003, Cl. 101-99.000.
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Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,284,914, Cl. 310-68.00D.
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Solbakken, Age; Apffel, Fred P.; Robinson, Sam P.; and Hayes, Bobby L., to Intenco, Inc. Process for recovering carbon black and hydrocarbons from used tires. 4,284,616, Cl. 423-461.000.
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Michel, Edmond, 4,284,397, Cl. 425-392.000.
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Nagasawa, Kohtaro; Morikubo, Kunio; and Satoh, Tsutomu, 4,284,707, Cl. 430-196.000.
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Akahira, Rokuro; and Someya, Shinzo, 4,284,427, Cl. 71-93.000.
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Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.
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Mori, Yoshihisa, 4,284,279, Cl. 369-63.000.
Soos, Joseph S.: *See*—
Scapes, John N.; and Soos, Joseph S., 4,284,100, Cl. 137-343.000.
Sordello, Frank J.: *See*—
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Souzu, Isao: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.
Specht, Theodore R.: *See*—
DeLaurentis, Angelo A.; Zola, Frank G., Jr.; and Specht, Theodore R., 4,283,842, Cl. 29-606.000.
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Carlson, Lewis R.; and Gassman, Dennis C., 4,285,040, Cl. 364-200.000.
Quermann, Thomas R., 4,283,960, Cl. 74-5.410.
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Thaxter, James B., 4,284,031, Cl. 118-657.000.
Zbinden, Terry B., 4,285,063, Cl. 375-106.000.
Spietschka, Ernst; and Urban, Manfred, to Hoechst Aktiengesellschaft. Thio-indigo dyestuffs. 4,284,789, Cl. 549-52.000.
Spinnler, Rainer: *See*—
Schroder, Rolf; Engelsmann, Dieter; Lermann, Peter; and Spinnler, Rainer, 4,284,342, Cl. 354-60.00E.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Acetyl hydrindacenes, acetyl indanes, mixtures of same, processes for preparing same and organoleptic uses thereof. 4,284,819, Cl. 568-327.000.
Springer, Willi, to Daimler-Benz Aktiengesellschaft. Multicylinder internal combustion engine with valve disconnection. 4,284,042, Cl. 123-198.00F.
Springthorpe, Anthony J.: *See*—
Dyment, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., 4,284,884, Cl. 250-205.000.
Srivastava, Gopal K., to Zenith Radio Corporation. Color correction circuit for a color television receiver. 4,285,005, Cl. 358-28.000.
Stablex A.G.: *See*—
Wright, David R., 4,284,514, Cl. 210-721.000.
Stacy, Larry C. Horse hoof pick. 4,283,805, Cl. 7-127.000.
Stafford, Irvin G.: *See*—
Seitz, Charles L.; Grunewald, Paul; Parker, Marshall M.; and Stafford, Irvin G., 4,284,988, Cl. 340-726.000.
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Connor, William R., Jr.; Hubele, Heinz; and Petry, Kurt, 4,284,020, Cl. 112-273.000.
Stahler, Theo. Device for aerating sewage or sewage-sludges. 4,284,503, Cl. 210-150.000.
Stamness, Delmer M.: *See*—
Rygajlo, Izydor, 4,284,293, Cl. 280-766.000.
Standard Oil Company (Indiana): *See*—
Darin, John K.; Partenheimer, Walter; and Figuly, Joseph D., 4,284,523, Cl. 252-420.000.
Standel, Richard R., Jr. Multiple clothes hangers carrying device. 4,284,219, Cl. 294-152.000.
Stankivitz, Charles J., Sr.: *See*—
Remick, David W.; and Stankivitz, Charles J., Sr., 4,283,885, Cl. 49-466.000.
Stanley, Edwin L.: *See*—
Krause, Horst E.; and Stanley, Edwin L., 4,284,073, Cl. 128-1.00D.
Stanley, Henry; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Blocked isocyanate diols and preparation thereof. 4,284,572, Cl. 260-347.400.
Stanton, Norman K., to Kraf, Inc. Fluidized oleoresin compositions. 4,284,657, Cl. 426-651.000.
Starr, Wayne E. Rotary hook for sewing machine. 4,284,017, Cl. 112-181.000.
Stauffer Chemical Company: *See*—
Blake, Robert J.; and Roy, Guy W., 4,284,833, Cl. 570-224.000.
Liu, Chong T., 4,284,515, Cl. 210-724.000.
Sherif, Fawzy G., 4,284,530, Cl. 252-455.00R.
Shim, Kyung S.; and Skrzec, Adam E., 4,284,817, Cl. 568-67.000.
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Gillis, John R.; Miraldi, Peter; and Stavers, Marius X., 4,284,600, Cl. 422-26.000.
Stearns, Llewelyn. Patterned chemical etching of high temperature resistant metals. 4,284,468, Cl. 156-661.100.
Steck, Warren F.: *See*—
Underhill, Edward W.; Steck, Warren F.; Chisholm, Melvin D.; and Arthur, Alfred P., 4,284,622, Cl. 424-84.000.
Steelite, Inc.: *See*—
Thompson, LeRoy, 4,283,897, Cl. 52-489.000.
Steelman, Melvin W.: *See*—
Subera, Elmer J.; Steelman, Melvin W.; and Fayez, Abraham, 4,283,922, Cl. 62-256.000.
Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef. Process for the production of bands or sheets of isotropic mechanical properties from copper or copper alloys. 4,284,436, Cl. 148-2.000.
Stehr, Wolfgang G.: *See*—
Patterson, Garvin W.; and Stehr, Wolfgang G., 4,285,039, Cl. 364-200.000.
Steichen, Richard J.: *See*—
Parker, Dane K.; and Steichen, Richard J., 4,284,516, Cl. 210-757.000.

Stein, Edward I., to General Electric Company. Apparatus for stripping a solid mass in a strip from a mill. 4,284,597, Cl. 264-130.000.
Steinberg, Hy. Solar oven. 4,284,071, Cl. 126-451.000.
Stendel, Wilhelm: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,284,643, Cl. 424-282.000.
Fuchs, Rainer; and Stendel, Wilhelm, 4,284,645, Cl. 424-304.000.
Sterlini, Jacques, to BBC Brown, Boveri & Company Limited. Method for the concentration of solutions. 4,284,480, Cl. 203-24.000.
Stermann, Vid, to Tobler S.A. Mecanique de Precision Franco-Suisse. Expansible chuck. 4,284,283, Cl. 279-2.00R.
Sterner, Maurice E., Jr., to Schlegel Corporation. Window assembly having removable sash. 4,283,883, Cl. 49-194.000.
Stetler, Peter J. Frame device. 4,283,870, Cl. 40-154.000.
Stevens, Howard O.: *See—*
Cannell, Michael J.; Carr, Slade L., Jr.; Stevens, Howard O.; and Surosky, Harold, 4,284,918, Cl. 310-178.000.
Stevenson, Alastair K.: *See—*
Fowler, Albert L.; Henderson, Alan G.; Stevenson, Alastair K.; and Walker, David M., 4,284,990, Cl. 340-870.320.
Stichling, Gerhardt C.; and McPherson, James, to Cartridge Actuated Devices, Inc. Explosive release clamp system. 4,283,987, Cl. 89-1.00B.
Stiff, Douglas A.: *See—*
Chiu, Randolph K.; Stiff, Douglas A.; and Cox, Francis G., 4,284,972, Cl. 340-52.00D.
Stillie, Donald G.: *See—*
Bryce, James R.; and Stillie, Donald G., 4,284,866, Cl. 200-159.00B.
Stillman, Nathan, to Champion International Corporation. Flexible packaging composite comprising an outer polyamide layer, an intermediate metal foil layer and an interior heat-sealable layer. 4,284,672, Cl. 428-35.000.
Stitt, Thomas D.: *See—*
Bailey, Ronald B.; and Stitt, Thomas D., 4,284,936, Cl. 318-381.000.
Stockinger, Friedrich: *See—*
Lohse, Friedrich; Stockinger, Friedrich; and Eldin, Sameer H., 4,284,755, Cl. 528-111.000.
Stockman, Richard F., to Air Preheater Company, Inc., The. Fail safe arrangement. 4,284,125, Cl. 165-9.000.
Stone, Aidan M., to General Electric Company. Transmission for washing machine. 4,283,928, Cl. 68-23.700.
Stone, Samuel M., to GTE Laboratories Incorporated. Method for producing an optical power sampling device. 4,284,449, Cl. 156-86.000.
Stonestrom, James P., to General Electric Company. Computerized tomographic reconstruction method and system utilizing reflection. 4,284,896, Cl. 250-445.00T.
Stonier, Roger A.; and Hayes, Richard A., to Ford Aerospace & Communications Corp. Method for bonding a skin member to honeycomb core. 4,284,457, Cl. 156-237.000.
Storage Technology Corporation: *See—*
Clingenpeel, Glenn R., 4,284,850, Cl. 370-81.000.
Stork Gamco, Inc.: *See—*
House, James B., 4,283,813, Cl. 17-45.000.
Strand, Charles A., Sr. Apparatus for conditioning air. 4,284,132, Cl. 165-103.000.
Strauch, Dieter: *See—*
Delfosse, Pierre; and Strauch, Dieter, 4,284,546, Cl. 260-29.60R.
Straus, Jozef: *See—*
Dyment, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., 4,284,884, Cl. 250-205.000.
Strittmatter, Bernhard; and Syre, Wolfgang, to Bodenseewerk Geratetechnik GmbH. External rotor gyroscope. 4,283,959, Cl. 74-5.700.
Struck, Hans: *See—*
Schmidt, Horst; and Struck, Hans, 4,284,229, Cl. 229-57.000.
Stucheli, Albin; and Trindler, Walter, to BBC Brown, Boveri & Company Limited. Multi-layer, high-temperature corrosion protection coating. 4,284,688, Cl. 428-559.000.
Stumpp, Gerhard, to Robert Bosch GmbH. Apparatus for controlling the air-fuel quantity ratio in internal combustion engines. 4,284,047, Cl. 123-449.000.
Subera, Elmer J.; Steelman, Melvin W.; and Fayez, Abraham, to Tyler Refrigeration Corporation. Air defrost system using secondary air band components. 4,283,922, Cl. 62-256.000.
Suchowerskyj, Wadym; Werner, Peter; Schnurle, Hans; Mohrle, Werner; and Drews, Urlich, to Robert Bosch GmbH. Apparatus for controlling the mixture composition in an internal combustion engine. 4,284,050, Cl. 123-483.000.
Sudarshan, E. C. George: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.
Sugasawa, Fukashi, to Nissan Motor Company, Limited. Split-type internal combustion engine. 4,284,056, Cl. 123-568.000.
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, to Takeda Chemical Industries, Ltd. Spirobenzofuranone compounds. 4,284,644, Cl. 424-285.000.
Sugiura, Yoji: *See—*
Kawamura, Masaharu; Shigeta, Yoshihiro; Uchidoi, Masanori; Sugiura, Yoji; and Yamamoto, Hiroshi, 4,284,333, Cl. 354-23.00D.
Sugiyama, Takashi; Ogawa, Masaya; and Murasaki, Hiroshi, to Minolta Camera Kabushiki Kaisha. Blade-type cleaning device for electrophotographic copying machine. 4,284,345, Cl. 355-15.000.
Sukolics, Ronald D., to Swiss Aluminium Ltd. Thermally improved expanded store front system. 4,283,895, Cl. 52-395.000.
Sukurai, Yasuhiko: *See—*
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Sulick, Richard C. Water-in-resin emulsions containing polyester resins. 4,284,547, Cl. 260-29.6NR.
Sullivan, Daryl D., to Johns-Manville Corporation. Enclosed industrial luminaire. 4,285,034, Cl. 362-305.000.
Sumitomo Chemical Company Limited: *See—*
Maruyama, Kunio, 4,284,615, Cl. 423-447.400.
Sato, Hiroshi; Fujisawa, Koiti; Tojima, Hideto; and Yasui, Seimei, 4,284,818, Cl. 568-323.000.
Sumitomo Light Metal Industries, Ltd.: *See—*
Baba, Yoshio; Tsuchida, Shin; and Tobinaga, Masaaki, 4,284,437, Cl. 148-11.50A.
Sun Chemical Corp.: *See—*
North, Bernard F., 4,284,758, Cl. 528-245.000.
Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, to Toyo Stauffer Chemical Co., Ltd. Titanium trichloride catalytic component and method for homo- of co-polymerization of α-olefin. 4,284,525, Cl. 252-429.00B.
Sunbeam Plastics Corporation: *See—*
Bush, Randall G.; and Gach, Peter P., 4,284,200, Cl. 215-215.000.
Sundin, Glen; and Spector, George. Bedroom lamp with clock operated lamp switch. 4,285,028, Cl. 362-35.000.
Surosky, Harold: *See—*
Cannell, Michael J.; Carr, Slade L., Jr.; Stevens, Howard O.; and Surosky, Harold, 4,284,918, Cl. 310-178.000.
Sutcliffe, Peter W.; Isaacs, Jim W.; and Lyon, Colin E., to United Kingdom Atomic Energy Authority. Preparation of shaped bodies. 4,284,593, Cl. 264-0.500.
Suxov, Gennady I.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,283,991, Cl. 91-299.000.
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, to Tokyo Shibaura Electric Co., Ltd. Information transfer control system. 4,285,038, Cl. 364-200.000.
Suzuki, Syunsuke: *See—*
Komatsu, Mikiya; Takashima, Syuichi; and Suzuki, Syunsuke, 4,284,124, Cl. 164-314.000.
Suzuki, Takehiko: *See—*
Sato, Takahisa; Nakanishi, Yoshiyuki; Maruyama, Keizo; and Suzuki, Takehiko, 4,284,571, Cl. 260-346.400.
Swaisgood, Harold E.: *See—*
Brown, Rodney J.; Swaisgood, Harold E.; and Horton, Horace R., 4,284,553, Cl. 260-112.00R.
Swanburg, Mark G. English/metric conversion mechanism for speedometers. 4,284,028, Cl. 116-62.200.
Sweany, Glenn A., to Conoco, Inc. Process for stimulating and upgrading the oil production from a heavy oil reservoir. 4,284,139, Cl. 166-267.000.
Swensen, Eugene T., to Honeywell Inc. Optical potentiometer. 4,284,885, Cl. 250-211.00K.
Swift, Gerald N.: *See—*
Tidmarsh, James N.; and Swift, Gerald N., 4,284,681, Cl. 428-246.000.
Swindle, Elro M. Solar collector system. 4,284,062, Cl. 126-423.000.
Swiss Aluminium Ltd.: *See—*
Sukolics, Ronald D., 4,283,895, Cl. 52-395.000.
Swodenk, Wolfgang: *See—*
Schenk, Norbert; Krekel, Jorg; Losacker, Paul; and Swodenk, Wolfgang, 4,284,576, Cl. 260-369.000.
Syd W. Collier Company Limited: *See—*
Collier, David S.; and Muxworthy, Allan S., 4,284,127, Cl. 165-35.000.
Sydansk, Robert D.; and Cordiner, Frank S., to Marathon Oil Co. Use of potassium hydroxide solutions in a well bore. 4,284,140, Cl. 166-291.000.
Symon, Ernest B.: *See—*
Hubbard, S. Eugene; Meisterheim, Richard A.; and Symon, Ernest B., 4,283,882, Cl. 49-141.000.
Syre, Wolfgang: *See—*
Strittmatter, Bernhard; and Syre, Wolfgang, 4,283,959, Cl. 74-5.700.
Syrier, Johannes L. M., to Shell Oil Company. 3,6,6-Trimethylbicyclo[3.1.0]hexane derivatives as pyrethrod intermediates. 4,284,820, Cl. 568-374.000.
Systems Engineering & Mfg. Corp.: *See—*
Yucius, Albert C.; and Brother, Michael D., 4,284,977, Cl. 340-147.00P.
Yucius, Albert C., 4,284,978, Cl. 340-147.00P.
Szabo, Ferenc: *See—*
Nagy, Ferenc; Szabo, Ferenc; and Szucs, Zoltan, 4,283,955, Cl. 73-772.000.
Sze, Morgan C., to Lummus Company, The. Supported vanadia catalyst and use thereof for nitrile production. 4,284,781, Cl. 546-286.000.
Szewalski, Robert, to Polska Akademia Nauk, Instytut Maszyn Przeplywowych. Moving blade for thermic axial turbomachines. 4,284,388, Cl. 416-223.00A.
Szostak, Jan, to Singer Company, The. Conversion assembly for sewing machine speed controller. 4,284,018, Cl. 112-217.400.
Szucs, Zoltan: *See—*
Nagy, Ferenc; Szabo, Ferenc; and Szucs, Zoltan, 4,283,955, Cl. 73-772.000.

Szybicki, Edmund; and Lavigne, Maurice E., to Northern Telecom Limited. Alternate routing for a telephone system. 4,284,852, Cl. 179-18.0EA.

Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, to Minolta Camera Kabushiki Kaisha. Electrographic developing method. 4,284,702, Cl. 430-122.000.

Tada, Yutaka: *See*—
Eguchi, Wataru; Harada, Makoto; Tanigaki, Masataka; and Tada, Yutaka, 4,283,935, Cl. 73-15.00A.

Tagashira, Yoshimi: *See*—
Yoshida, Yasuharu; Tagashira, Yoshimi; and Yokoyama, Seijiro, 4,285,062, Cl. 375-20.000.

Takada, Juichiro. Passive vehicle passenger restraint belt system. 4,284,294, Cl. 280-803.000.

Takahashi, Haruo; and Kimura, Shougo, to Sankyo Electric Company Limited. Refrigerant compressors. 4,283,997, Cl. 92-79.000.

Takahashi, Yoshikazu: *See*—
Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, 4,284,525, Cl. 252-429.00B.

Takami, Katsumi; and Matsuzawa, Takashi, to Hitachi, Ltd. Self-luminescent light source for liquid crystal display. 4,285,055, Cl. 368-226.000.

Takashima, Syuichi: *See*—
Komatsu, Mikiya; Takashima, Syuichi; and Suzuki, Syunsuke, 4,284,124, Cl. 164-314.000.

Takashima, Yuji: *See*—
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuichi, 4,284,696, Cl. 430-42.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, 4,284,631, Cl. 424-246.000.

Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, to Fujisawa Pharmaceutical Co., Ltd. 7-Substituted cephem compounds and pharmaceutical antibacterial compositions containing them. 4,284,631, Cl. 424-246.000.

Takayada, Hiroaki: *See*—
Yamada, Sachiko; Ohmori, Masayuki; and Takayama, Hiroaki, 4,284,577, Cl. 260-397.200.

Takayama, Hiroaki: *See*—
Yamada, Sachiko; Ohmori, Masayuki; and Takayama, Hiroaki, 4,284,577, Cl. 260-397.200.

Takeda Chemical Industries, Ltd.: *See*—
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,284,644, Cl. 424-285.000.

Takeda, Masami; and Nagano, Riichiro, to Mitsui Petrochemical Industries, Ltd. Hot-melt pressure sensitive adhesive compound. 4,284,541, Cl. 260-27.00R.

Takeda, Nobuhiro; Hattori, Masaichi; and Mizuno, Shigeo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki Seisakusho. Webbing hanging device. 4,284,295, Cl. 280-803.000.

Takeda, Shojiro; Kinno, Bunji; and Yamaguchi, Yutaka, to Toyo Engineering Corporation. Transportable bed for industrial equipment. 4,283,890, Cl. 52-143.000.

Takemae, Mikio; and Tanaka, Hiroaki, to Nippon Kogaku K.K. Focus detecting apparatus. 4,284,335, Cl. 354-25.000.

Takematsu, Tetsuo; and Hoya, Masaaki, to Hodogaya Chemical Co., Ltd. Benzamide derivatives and herbicidal composition containing the same. 4,284,813, Cl. 564-168.000.

Takitani, Masaru: *See*—
Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, 4,284,525, Cl. 252-429.00B.

Talres Development (N.A.) N.V.: *See*—
Thelwall, Leslie A. W.; Hough, Leslie; and Richardson, Anthony C., 4,284,763, Cl. 536-4.000.

Tamori, Michitoshi; Shintani, Sotokichi; Kobayashi, Hideo; and Yanagidaira, Hidetaka, to Kokusai Denshin Denwa Co., Ltd. Delay circuit. 4,285,045, Cl. 364-724.000.

Tamura, Koichi: *See*—
Haraikawa, Tetsuo; and Tamura, Koichi, 4,284,176, Cl. 188-71.700.

Tamuri, Masaki; Kanno, Mitsuo; and Ishii, Yoshiko, to CPC International Inc. Heat and acid-stable alpha-amylase enzymes and processes for producing the same. 4,284,722, Cl. 435-94.000.

Tanaka, Eiichi: *See*—
Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, 4,284,628, Cl. 424-230.000.

Tanaka, Hiroaki: *See*—
Takemae, Mikio; and Tanaka, Hiroaki, 4,284,335, Cl. 354-25.000.

Tanaka, Kazuo, to Canon Kabushiki Kaisha. Photographic objective having a focusing control with prevention of change in angular field of view. 4,284,331, Cl. 350-427.000.

Tanaka, Mitsugu: *See*—
Ogawa, Junkichi; Tanaka, Mitsugu; and Yamada, Minoru, 4,284,714, Cl. 430-364.000.

Tanaka, Susumu: *See*—
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, 4,284,702, Cl. 430-122.000.

Tanaka, Toshie, to Nifco Inc. Binding device. 4,283,816, Cl. 24-269.000.

Tang, Sunny C.: *See*—
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., 4,284,835, Cl. 585-277.000.

Tani, Keizo: *See*—
Fuse, Noboru; Muramoto, Kenichi; Tani, Keizo; and Iwanishi, Masaaki, 4,284,998, Cl. 357-22.000.

Tanigaki, Masataka: *See*—
Eguchi, Wataru; Harada, Makoto; Tanigaki, Masataka; and Tada, Yutaka, 4,283,935, Cl. 73-15.00A.

Tanno, Seikichi: *See*—
Matsuzaki, Osamu; Abe, Michio; Mitobe, Koichi; and Tanno, Seikichi, 4,284,662, Cl. 427-68.000.

Tarnowski, Stanley J., Jr.: *See*—
Bucovaz, Edsel T.; Morrison, John C.; Whybrew, Walter D.; and Tarnowski, Stanley J., Jr., 4,284,552, Cl. 260-112.00R.

Tate, Masahisa; Yoshiwara, Tetsuya; and Kobatake, Tatsuo, to Nippon Kokan Kabushiki Kaisha. Method of continuous casting. 4,284,214, Cl. 222-590.000.

Tatebayashi, June; and Yano, Kazuaki, to Kawasaki Jukogyo Kabushiki Kaisha. Method and means for feeding fuel into fluidized-bed combustion apparatus. 4,284,401, Cl. 431-7.000.

Tateoka, Kiyoshi: *See*—
Hayashida, Yoshihiro; Tateoka, Kiyoshi; and Ando, Hiromi, 4,283,993, Cl. 91-376.00R.

Taylor, David B., to Dowty Meco Limited. Chain conveyors having means for controlling chain tension. 4,284,192, Cl. 198-813.000.

Taylor, Larry T.: *See*—
St. Clair, Anne K.; Taylor, Larry T.; St. Clair, Terry L.; and Frosch, Robert A. Administrator or the National Aeronautics and Space Adminstration, with respect to an invention of Anne K. St. Clair, Larry T. Taylor, Terry L. St. Clair, 4,284,461, Cl. 156-331.500.

Taylor, William T. Anti-kick, anti-fall running tool and instrument hanger and tubing packoff tool. 4,284,137, Cl. 166-137.000.

TBT Tiefbohrtechnik GmbH & Co.: *See*—
Muhleisen, Bruno, 4,284,375, Cl. 408-226.000.

TDK Electronic Co., Ltd.: *See*—
Kubota, Yuichi, 4,284,684, Cl. 428-328.000.

Teaney, Edwin L.: *See*—
Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., 4,283,822, Cl. 29-156.80H.

Technalytics, Inc.: *See*—
Hall, Richard, 4,284,076, Cl. 128-207.180.

Technos: *See*—
Bizard, Andre G. M. A., 4,283,807, Cl. 15-3.510.

Teitin Limited: *See*—
Inokuchi, Norio; Fukumoto, Teruhisa; and Mori, Yoshio, 4,284,596, Cl. 264-45.300.

Tekron Licensing B.V.: *See*—
Evans, Harold R.; and Cunnington, Ian J., 4,284,272, Cl. 272-72.000.

Tektronix, Inc.: *See*—
Haven, Duane A.; and Arneson, Robert L., 4,284,661, Cl. 427-64.000.

Telex Computer Products, Inc.: *See*—
Plachy, Ivo T.; Clymer, Jack W.; and Pembroke, Richard W., 4,284,250, Cl. 242-68.300.

Temme, George H., to Upjohn Company, The. 1,4-Diazabicycloctane di-N,N'-quaternized compounds. 4,284,775, Cl. 544-351.000.

Tempo G: *See*—
Jhono, Shigeru, 4,283,831, Cl. 29-423.000.

Tencor Instruments: *See*—
Kren, George J.; and Koenig, Franklin R., 4,285,053, Cl. 367-99.000.

Tenneco Chemicals, Inc.: *See*—
Keck, David R., 4,284,500, Cl. 209-250.000.

Tervamaki, Jukka, to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi. Device for detaching and removing a disposable tip of a pipette. 4,283,950, Cl. 73-864.140.

Tervamaki, Jukka, to Kommandiittiyhio Finnpipette Osmo A Suovaniemi. Pipette with adjustable volume. 4,284,604, Cl. 422-100.000.

Tetenbaum, Marvin T.; and Case, Barton C., to NL Industries, Inc. Biomedical devices. 4,284,506, Cl. 210-321.400.

Tetra Pak International AB: *See*—
Cetrelli, Renato, 4,284,228, Cl. 229-48.00R.
Pupp, Herwig; Andersson, Otto B.; and Nilsson, Jan-Erik, 4,284,448, Cl. 156-86.000.

Tetro, Roland G., to Transamerica DeLaval Inc. Encapsulated magnetically sensitive circuit elements for depth-indicating purposes or the like. 4,284,904, Cl. 307-118.000.

Texaco Inc.: *See*—
Marquis, Edward T.; Watts, Lewis W., Jr.; and Gipson, Robert M., 4,284,815, Cl. 564-332.000.
Marquis, Edward T.; and Watts, Lewis W., Jr., 4,284,816, Cl. 564-332.000.

Texas Instruments Incorporated: *See*—
Parsons, Robert, 4,284,989, Cl. 340-731.000.

Textron Inc.: *See*—
Godkin, Louis A., 4,284,297, Cl. 285-47.000.
Putetti, Anthony M., 4,283,932, Cl. 72-345.000.

Thaxter, James B., to Sperry Corporation. Magnetic transfer surface for controlling toner thickness. 4,284,031, Cl. 118-657.000.

Thayer, Dennis M.: *See*—
Marben, Ronald D., 4,284,267, Cl. 269-266.000.

Thayer, William L.: *See*—
Capes, C. Edward; Thayer, William L.; Coleman, Richard D.; and Messer, Leonard, 4,284,413, Cl. 44-51.000.

Thelwall, Leslie A. W.; Hough, Leslie; and Richardson, Anthony C., to Talres Development (N.A.) N.V. Sugar acetals, their preparation and use. 4,284,763, Cl. 536-4.000.

Therglas GmbH fur Flachenheizung: *See*—
Bethge, Walther; and Bethge, Dietrich, 4,284,452, Cl. 156-99.000.
Theurer, Josef; and Folser, Karl, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Motorized railway vehicle track working machine and method of operation. 4,284,009, Cl. 104-7.00R.
Thiel, Max: *See*—
Friebe, Walter-Gunar; Thiel, Max; Kampe, Wolfgang; Wilhelms, Otto-Henning; and Roesch, Androniki, 4,284,633, Cl. 424-253.000.
Thissen, Christopher P.; Ferwerda, Jerry J.; Tweet, Milford J.; and Hatfield, Ronald D., to Walker Process Corporation. Apparatus for vacuum thermoforming polymeric sheet material. 4,284,396, Cl. 425-342.100.
Thomas, Bobby J.: *See*—
Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., 4,284,350, Cl. 356-28.500.
Thomas, Jack W.: *See*—
Gibson, Harry G.; Thorner, Benjamin C.; and Thomas, Jack W., 4,284,987, Cl. 340-689.000.
Thomas, Luc; and Cardot, Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Digital generator for producing a sinewave. 4,285,044, Cl. 364-721.000.
Thomason, Harry E. Heat storage and heat exchanger. 4,284,059, Cl. 126-415.000.
Thompson, Charles C., to United Technologies Corporation. Gas manifold for particle quenching. 4,284,394, Cl. 425-8.000.
Thompson, Christopher J., to Montreal Neurological Institute. Coincidence analysis circuit for positron annihilation imaging device. 4,284,890, Cl. 250-363.00S.
Thompson, LeRoy, to Steelite, Inc. Snap action panel wall construction. 4,283,897, Cl. 52-489.000.
Thomson-CSF: *See*—
Dupressoir, Albert, 4,284,991, Cl. 343-725.000.
Huignard, Jean-Pierre; and Herriau, Jean-Pierre, 4,284,324, Cl. 350-3.640.
Lemonon, Claire; Micheron, Francois; and Wang, Pierre, 4,284,921, Cl. 310-328.000.
Ragot, Claude, 4,284,928, Cl. 315-375.000.
Thorner, Benjamin C.: *See*—
Gibson, Harry G.; Thorner, Benjamin C.; and Thomas, Jack W., 4,284,987, Cl. 340-689.000.
Thorogood, Peter B., to Burroughs Wellcome Co. Pharmaceutically active imidazole derivatives. 4,284,641, Cl. 424-273.00R.
Tidmarsh, James N.; and Swift, Gerald N., to Dycem Limited. Composite sheet material. 4,284,681, Cl. 428-246.000.
Tiemann, Jerome J., to General Electric Company. Charge domain filter with single transmission zero. 4,284,908, Cl. 307-221.00D.
Tiemann, Jerome J., to General Electric Company. Charge domain filter with a plurality of transmission zeros. 4,284,909, Cl. 307-221.00D.
Tiemann, Jerome J.: *See*—
Vogelsong, Thomas L.; and Tiemann, Jerome J., 4,284,907, Cl. 307-221.00D.
Tien, Hsuan L.; and Olson, Kenneth E., to American Cyanamid Company. Process for preparing melamine. 4,284,771, Cl. 544-200.000.
Tietjens, Eduard W.: *See*—
Engelhardt, Manfred; Reinink, Jan; de Vries, Jochem J.; and Tietjens, Eduard W., 4,283,849, Cl. 30-43.600.
Tijunelis, Donatas; Boyd, Clinton A.; and Vandevier, Joseph E., to Centrilift, Inc. Cable. 4,284,841, Cl. 174-103.000.
Timmis, William W. Plotting device. 4,283,861, Cl. 33-449.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Okumura, Yoshiharu; and Kaneko, Katsumi, 4,284,831, Cl. 568-899.000.
Tobe, Akihiro: *See*—
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiro; and Egawa, Mitsuo, 4,284,637, Cl. 424-267.000.
Tobinaga, Masaaki: *See*—
Baba, Yoshio; Tsuchida, Shin; and Tobinaga, Masaaki, 4,284,437, Cl. 148-11.50A.
Tobler S.A. Mecanique de Precision Franco-Suisse: *See*—
Stermann, Vid, 4,284,283, Cl. 279-2.00R.
Todd, David B., to Baker Perkins Inc. Liquid-liquid centrifugal contacting machines and methods of constructing and operating them. 4,284,232, Cl. 233-15.000.
Todd, George S.: *See*—
Slavin, Michael; Rea, Irvin B.; and Todd, George S., 4,284,857, Cl. 179-115.00R.
Tohzuka, Takashi; and Ohsaka, Yohnosuke, to Daikin Kogyo Co., Ltd. Process for preparing hexafluoroacetone. 4,284,822, Cl. 568-399.000.
Tojima, Hideto: *See*—
Sato, Hiroshi; Fujisawa, Koiti; Tojima, Hideto; and Yasui, Seimei, 4,284,818, Cl. 568-323.000.
Tokai Metals Company, Limited: *See*—
Hirata, Isao, 4,284,205, Cl. 220-418.000.
Tokai TRW & Co. Ltd.: *See*—
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, 4,284,054, Cl. 123-536.000.
Tokico Ltd.: *See*—
Haraikawa, Tetsuo; and Tamura, Koichi, 4,284,176, Cl. 188-71.700.
Hayashida, Yoshihiro; Tateoka, Kiyoshi; and Ando, Hiromi, 4,283,993, Cl. 91-376.00R.
Hayashida, Yoshihiro, 4,284,308, Cl. 303-6.00C.
Tokunaga, Masaaki; Hagi, Chitoshi; and Murayama, Hirokazu, to Hitachi Metals, Ltd. Rare earth metal-cobalt permanent magnet alloy. 4,284,440, Cl. 148-31.570.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, 4,285,032, Cl. 362-224.000.
Kasama, Kiyoshi, 4,284,473, Cl. 176-19.00R.
Kitagawa, Yukio; and Moriya, Yoshiaki, 4,285,036, Cl. 364-200.000.
Oguchi, Toshihiko; Ishizawa, Akio; and Yoshida, Hiromi, 4,284,700, Cl. 430-105.000.
Sato, Ichiro, 4,285,011, Cl. 358-112.000.
Sekiguchi, Kunio; and Noguti, Masaharu, 4,284,937, Cl. 318-388.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Fuse, Noboru; Muramoto, Kenichi; Tani, Keizo; and Iwanishi, Masaaki, 4,284,998, Cl. 357-22.000.
Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, 4,284,432, Cl. 106-73.200.
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,285,038, Cl. 364-200.000.
Tolasch, Gerhard: *See*—
Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, 4,283,998, Cl. 493-4.000.
Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, to Egyt Gyogyszervegyeszeti Gyar. 1,3-Diaryl-2-imino-imidazolidines and compositions thereof. 4,284,642, Cl. 424-273.00R.
Tollet, Marcel, to Societe pour l'Affranchissement et le Timbrage Automatiques (S.A.T.A.S.). Printer with a plurality of electrically controlled print wheels. 4,284,003, Cl. 101-99.000.
Tomita, Takao; and Hiruma, Masao, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic shock absorber. 4,284,178, Cl. 188-281.000.
Tomka, Ivan, to Ciba-Geigy Aktiengesellschaft. Process for incorporating photographic additives in hydrophilic colloid preparations. 4,284,709, Cl. 430-222.000.
Tonparo Limited: *See*—
Small, Peter S.; and Small, Peter W., 4,284,145, Cl. 171-18.000.
Toolmark Co.: *See*—
Petersen, Paul S.; and Holdahl, Robert A., 4,284,111, Cl. 142-56.000.
Toray Industries, Inc.: *See*—
Iida, Hiroshi; Kometani, Kiichi; and Yanagi, Masana, 4,284,540, Cl. 260-22.00R.
Touchton, James J.: *See*—
Rose, Andrew M.; Sordello, Frank J.; and Touchton, James J., 4,285,015, Cl. 360-78.000.
Tough-Guard, Inc.: *See*—
Nixon, Charles R., 4,284,668, Cl. 427-355.000.
Toulios, Peter P.; and Hartman, Kenneth D., to ARES, Inc. Doppler-type projectile velocity measurement and communication apparatus, and method. 4,283,989, Cl. 89-6.500.
Toya, Ichizo; and Fuseya, Yoshiharu, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 4,284,717, Cl. 430-567.000.
Toyo Engineering Corporation: *See*—
Takeda, Shojiro; Kinno, Bunji; and Yamaguchi, Yutaka, 4,283,890, Cl. 52-143.000.
Toyo Rubber Industry Co., Ltd., The: *See*—
Ohnishi, Shumio, 4,284,115, Cl. 152-209.00R.
Toyo Soda Mfg. Co., Ltd.: *See*—
Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, 4,284,721, Cl. 435-70.000.
Toyo Stauffer Chemical Co., Ltd.: *See*—
Sunada, Yoichi; Takahashi, Yoshikazu; and Takitani, Masaru, 4,284,525, Cl. 252-429.00B.
Toyomura, Yasuhiro: *See*—
Fujisaki, Hitoshi; Onodera, Hideo; and Toyomura, Yasuhiro, 4,284,912, Cl. 307-255.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Nakamura, Akira; and Oguri, Masato, 4,283,911, Cl. 60-547.00R.
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.
Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, 4,284,486, Cl. 204-195.00S.
Takeda, Nobuhiro; Hattori, Masaichi; and Mizuno, Shigeo, 4,284,295, Cl. 280-803.000.
Traintronics Inc.: *See*—
Beyl, Earl L., Jr.; and Cunningham, William C., 4,284,954, Cl. 328-75.000.
Transamerica DeLaval Inc.: *See*—
Tetro, Roland G., 4,284,904, Cl. 307-118.000.
Trautmann, Hugh M., to Billco Manufacturing, Inc. Indexing mechanism for tool head. 4,283,981, Cl. 83-884.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Use of 1-hydroxy-1-ethynyl-2,2,6-trimethyl cyclohexane in augmenting or enhancing the aroma or taste of foodstuffs. 4,284,654, Cl. 426-538.000.
Trindler, Walter: *See*—
Stucheli, Albin; and Trindler, Walter, 4,284,688, Cl. 428-559.000.
Trippe, Jerry C.: *See*—
Weitzen, William; and Trippe, Jerry C., 4,284,511, Cl. 210-661.000.
Trotta, Robert A.: *See*—
Douglass, Paul W.; and Trotta, Robert A., 4,283,850, Cl. 30-47.000.
Tschirch, Richard P.; Sidman, Kenneth R.; and Frosch, Robert A. Heat sealable, flame and abrasion resistant coated fabric. 4,284,682, Cl. 428-263.000.
Tsuchida, Shin: *See*—
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Tsushima, Tachiro: *See—*
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Tu, Ju C.: *See—*
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Tucker, Alan C.: *See—*
Kaye, Albert E.; and Tucker, Alan C., 4,284,582, Cl. 260-464.000.

Tulloch, Gavin E., to Plessey Australia Pty. Limited. Bubble noise reduction. 4,284,169, Cl. 181-211.000.

Tully, Louis E.: *See—*
McConnell, David P.; and Tully, Louis E., 4,283,915, Cl. 60-650.000.

Tuovinen, Frans H.: *See—*
Heimala, Seppo O.; and Tuovinen, Frans H., 4,284,665, Cl. 427-203.000.

Tuson, Samuel; and Loire, Rene, to Enterprise d'Equipements Mecaniques et Hydrauliques. Movable-joint device for connecting a seabed exploitation column to its base, connecting and disconnecting processes using the said device, and joint element used in the said device. 4,284,367, Cl. 405-202.000.

Tweet, Milford J.: *See—*
Thissen, Christopher P.; Ferwerda, Jerry J.; Tweet, Milford J.; and Hatfield, Ronald D., 4,284,396, Cl. 425-342.100.

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Subera, Elmer J.; Steelman, Melvin W.; and Fayez, Abraham, 4,283,922, Cl. 62-256.000.

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Ullmann, Roland: *See—*
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Hollis, Samuel D., 4,284,543, Cl. 260-27.0EV.

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Boros, Eugene J.; and Peck, David W., 4,284,727, Cl. 521-28.000.
Comstock, Lowell R.; and Smith, Percy L., 4,284,736, Cl. 525-169.000.
Kaufman, Lawrence G.; Merriam, Charles N.; and Pepe, Enrico J., 4,284,548, Cl. 260-38.000.
Moked, Isaac; Handwerk, Richard H.; and Goettler, Hans J., 4,284,105, Cl. 138-42.000.

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Sutcliffe, Peter W.; Isaacs, Jim W.; and Lyon, Colin E., 4,284,593, Cl. 264-0.500.
Walton, Hyman, 4,284,947, Cl. 324-61.00R.

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Agriculture: *See—*
Bruemmer, Joseph H., 4,284,651, Cl. 426-50.000.
Gibson, Harry G.; Thorner, Benjamin C.; and Thomas, Jack W., 4,284,987, Cl. 340-689.000.
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Landau, Darrell W., 4,284,961, Cl. 331-65.000.
Maier, Roe J., Jr., 4,284,964, Cl. 331-94.50S.
Rieben, Ralph E., 4,284,254, Cl. 244-75.00R.
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Burlage, Donald W.; and Lancaster, James F., 4,285,059, Cl. 371-25.000.
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Kirkendall, Richard D.; Drysdale, William H.; Kokinakis, Louise D.; and Burns, Bruce P., 4,284,008, Cl. 102-521.000.
Kwak, Solim S. W., 4,284,832, Cl. 570-190.000.
Overman, David L.; and Johnson, Robert N., 4,284,862, Cl. 200-61.45R.
Sollott, Gilbert P., 4,284,484, Cl. 204-158.00R.
Voigt, H. William, Jr., 4,284,442, Cl. 149-19.400.
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Interior: *See—*
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Cannell, Michael J.; Carr, Slade L., Jr.; Stevens, Howard O.; and Surosky, Harold, 4,284,918, Cl. 310-178.000.
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,284,962, Cl. 331-94.50F.
Garrett, Robert A.; Silva, John; and Allen, Craig R., 4,284,929, Cl. 318-51.000.
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Manfredi, Urbano, 4,284,906, Cl. 307-228.000.

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Engelhardt, Manfred; Reinink, Jan; de Vries, Jochem J.; and Tietjens, Eduard W., 4,283,849, Cl. 30-43.600.
Horster, Horst; Hermann, Wilhelm; and Klinkenberg, Klaus, 4,284,069, Cl. 126-438.000.
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Pergrale, Jean; and Jatteau, Michel, 4,284,891, Cl. 250-363.00S.
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Van Deursen, Theodorus H. M., 4,285,066, Cl. 455-166.000.

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Ferris, Donald L., 4,284,387, Cl. 416-134.00A.
Larson, Richard S.; and Packman, Allan B., 4,284,170, Cl. 181-213.000.
Obrochta, Frank T.; and Disa, Ralph E., 4,283,835, Cl. 29-527.600.
Thompson, Charles C., 4,284,394, Cl. 425-8.000.

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Janisiewicz, Stanley; and Holmes, Robert H., 4,283,836, Cl. 29-564.100.

University of California, The Regents of the: *See—*
Popendorf, William J., 4,284,383, Cl. 414-417.000.

University of Kentucky Research Foundation, The: *See—*
Hussain, Anwar A.; Hirai, Shinichiro; and Bawarshi, Rima, 4,284,648, Cl. 424-330.000.

University of Pittsburgh: *See—*
Grieco, Paul A., 4,284,794, Cl. 560-121.000.

UOP Inc.: *See—*
Allred, Richard E., 4,284,138, Cl. 166-233.000.
Kwong, Gary W. Y.; and Levy, Joseph, 4,284,415, Cl. 44-72.000.
Pujado, Peter R., 4,284,583, Cl. 260-465.00C.

Upjohn Company, The: *See—*
Gammill, Ronald B., 4,284,569, Cl. 260-345.200.
Johnson, Garland A.; and Peuler, Jacob D., 4,284,587, Cl. 564-365.000.
Sih, John C., 4,284,792, Cl. 560-55.000.
Sih, John C., 4,284,795, Cl. 560-121.000.
Sih, John C., 4,284,798, Cl. 562-503.000.
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Temme, George H., 4,284,775, Cl. 544-351.000.
Walker, Jerry A., 4,284,827, Cl. 568-686.000.

Uraneck, Carl A.; and Burleigh, John E., to Phillips Petroleum Company. Polymers of conjugated dienes which have terminal conjugated unsaturated alicyclic functional groups. 4,284,741, Cl. 525-297.000.

Urban, Manfred: *See—*
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Uribe, Jorge R. Pneumatic brake actuating system. 4,284,253, Cl. 254-271.000.

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Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., 4,284,557, Cl. 260-239.30B.

USM Corporation: *See—*
Ettinger, Donald H., 4,284,870, Cl. 219-99.000.
Kulik, Alphonse C.; and Walter, Josef J., 4,283,806, Cl. 12-142.00R.
Prichard, Arthur W.; and Sharp, Francis B., 4,284,874, Cl. 219-215.000.

Vakil, Himanshu B., to General Electric Company. Vapor compression cycle device with multi-component working fluid mixture and method of modulating the thermal transfer capacity thereof. 4,283,919, Cl. 62-114.000.

Vamvakas, Michael, to Niagara Bottle Washer Manufacturing Co., a division of The Salangmack Company. Multiple bottle carrier structure. 4,284,189, Cl. 198-647.000.
van der Burg, Willem J., to Akzona Incorporated. 10-Hydroxy-1,2,3,4,10,14b-hexahydrodibenzo-[c,f] pyrazino-1,2a-azepines. 4,284,559, Cl. 260-243.300.
van der Heyden, Andre; Coussement, Marc; and Van Peteghem, Antoine, to Metallurgie Hoboken-Overpelt. Production of battery-grade manganese dioxide. 4,284,618, Cl. 423-605.000.
van der Lely, Cornelis. Mowing machine. 4,283,905, Cl. 56-295.000.
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Van Deursen, Theodorus H. M., to U.S. Philips Corporation. Receiver having a search tuning circuit. 4,285,066, Cl. 455-166.000.
Vandevier, Joseph E.: *See*—
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Vandre, Vallace W.: *See*—
Bowser, Milford D.; and Vandre, Vallace W., 4,283,946, Cl. 73-864.310.
Van Exel, Gerrit A. Adjustable display device. 4,283,872, Cl. 40-491.000.
vanOene, Henk: *See*—
Chattha, Mohinder S.; and vanOene, Henk, 4,284,754, Cl. 528-107.000.
Van Ommering, Gerrit: *See*—
Koehler, Charles W.; and Van Ommering, Gerrit, 4,284,690, Cl. 429-26.000.
Van Opstal, Martin: *See*—
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van der Heyden, Andre; Coussement, Marc; and Van Peteghem, Antoine, 4,284,618, Cl. 423-605.000.
Van Scott, Eugene J.: *See*—
Yu, Ruey J.; and Van Scott, Eugene J., 4,284,630, Cl. 424-241.000.
Van Teslaar, David A., to Randtron. Replaceable pulley lagging. 4,284,409, Cl. 474-185.000.
Varga, Julianna K.: *See*—
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Varpio, Leonid. Measuring cup with leveler. 4,283,951, Cl. 73-426.000.
Vaughan, John M.: *See*—
Alldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., 4,284,351, Cl. 356-28.500.
Vaughn, James C. Muzzle loading firearm. 4,283,874, Cl. 42-51.000.
Veaux, Jacques: *See*—
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Veb Kombinat Textima: *See*—
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VEB Polygraph Druckmaschinewerke Leipzig: *See*—
Hank, Dietrich, 4,284,222, Cl. 226-181.000.
Veb Werkzeugmaschinenkombinat "7. Oktober" Berlin: *See*—
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Veda, Inc.: *See*—
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Veeder Industries Inc.: *See*—
Smilgys, Bruno S., 4,283,967, Cl. 74-681.000.
Velsicol Chemical Corporation: *See*—
Luteri, George F., 4,284,425, Cl. 71-27.000.
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Vereinigte Edelstahlwerke Aktiengesellschaft (VEW): *See*—
Plockinger, Erwin; Kuhnelt, Gert; and Machner, Peter, 4,284,123, Cl. 164-515.000.
Vereinigte Flugtechnische Werke-Fokker GmbH: *See*—
Schutze, Horst, 4,283,924, Cl. 62-402.000.
Veroef, Hendrikus M., to Ralph McKay Limited. Rail fasteners. 4,284,238, Cl. 238-349.000.
Vesterberg, Olof, to C. Desaga GmbH Nachf. Erich Fecht. Apparatus for electrophoresis. 4,284,491, Cl. 204-299.00R.
Vickers, Stanley E.: *See*—
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Vidrine, Drouet W.; and Peterson, Paul E., to Nicolet Instrument Corporation. Nuclear magnetic resonance spectrometer and method. 4,284,949, Cl. 324-315.000.
Vinals, Joaquin F.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,284,819, Cl. 568-327.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.
Vitchus, Bernard C.: *See*—
Sheets, Jesse E.; Vitchus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., 4,284,402, Cl. 431-9.000.
Vock, Manfred H.: *See*—
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Voelz, Richard F., to Renner Manufacturing. Mobile crane. 4,284,159, Cl. 180-140.000.
Vogelsong, Thomas L.; and Tiemann, Jerome J., to General Electric Company. Charge transfer filter. 4,284,907, Cl. 307-221.00D.
Vogt, Sybrand W.: *See*—
Boer, Edo; and Vogt, Sybrand W., 4,284,408, Cl. 474-14.000.
Vogt, Wilhelm: *See*—
Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,284,732, Cl. 252-609.000.
Voigt, H. William, Jr., to United States of America, Army. Castable TNT compositions containing a broad spectrum preformed thermoplastic polyurethane elastomer additive. 4,284,442, Cl. 149-19.400.
Volenec, Donald C. Fishing plug with internal attracters. 4,283,876, Cl. 43-42.330.
Vollkommer, Norbert: *See*—
Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,284,732, Cl. 252-609.000.
Volvo Car B.V.: *See*—
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von Basse, Paul W.: *See*—
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Von Stetten, Hanns N., to Siemens Aktiengesellschaft. Circuit arrangement for a switching system. 4,285,037, Cl. 364-200.000.
Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, to Schering Aktiengesellschaft. Prostanoic acid derivatives and their preparation. 4,284,646, Cl. 424-305.000.
Vukovich, William J., to General Motors Corporation. Automatic transmission line pressure control. 4,283,970, Cl. 74-866.000.
W. R. Grace & Co.: *See*—
Schirmer, Henry G., 4,284,458, Cl. 156-244.120.
W. Schlafhorst & Co.: *See*—
Kamp, Heinz; and Rohner, Joachim, 4,283,908, Cl. 57-276.000.
Wachtel, Jack S.: *See*—
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Wada, Kenichi: *See*—
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, 4,284,702, Cl. 430-122.000.
Waeldner, William J.: *See*—
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Wagener, Dietrich; Flockenhaus, Claus; and Meckel, Joachim F., to Didier Engineering GmbH. Process and apparatus for utilization of the sensible heat of hot coke for drying and preheating coking coal. 4,284,476, Cl. 201-39.000.
Wagner, Fritz: *See*—
Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, 4,284,509, Cl. 210-610.000.
Wagner, Wolfgang. Suction injector having an adjustable dosing device. 4,284,077, Cl. 128-215.000.
Wahle, Gunter: *See*—
Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, 4,283,998, Cl. 493-4.000.
Wakamiya, Masatoshi, to Bridgestone Tire Co., Ltd. Anchor box embedded in concrete. 4,283,899, Cl. 52-699.000.
Wakeman, Anthony C., to Lucas Industries, Limited. Reciprocating piston internal combustion engine. 4,284,055, Cl. 123-556.000.
Wakizaka, Hiroshi: *See*—
Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, 4,284,486, Cl. 204-195.00S.
Walbrun, Lawrence A., to American Can Company. Apparatus for the manufacture of fibrous sheet structure. 4,284,465, Cl. 156-513.000.
Waldmeier, Peter; and Delini-Stula, Aleksandra, to Ciba-Geigy Corporation. Pharmaceutical compositions with central depressant and antipsychotic activity having a butyrophenone derivative which is substituted in the 4-position and a C-(2-benzofuranyl)-piperidine or C-(2-benzofuranyl)-tetrahydro-pyridine. 4,284,638, Cl. 424-267.000.
Walker, David M.: *See*—
Fowler, Albert L.; Henderson, Alan G.; Stevenson, Alastair K.; and Walker, David M., 4,284,990, Cl. 340-870.320.
Walker, Jerry A., to Upjohn Company, The. Process to prepare metalated olefins. 4,284,827, Cl. 568-686.000.
Walker Process Corporation: *See*—
Thissen, Christopher P.; Ferwerda, Jerry J.; Tweet, Milford J.; and Hatfield, Ronald D., 4,284,396, Cl. 425-342.100.
Walter, Josef J.: *See*—
Kulik, Alphonse C.; and Walter, Josef J., 4,283,806, Cl. 12-142.00R.
Walter, Lothar: *See*—
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Walton, Hyman, to United Kingdom Atomic Energy Authority. Detecting the size and shape of bodies. 4,284,947, Cl. 324-61.00R.
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Wanat, Ronald J., to Motorola, Inc. Wide bandwidth helical resonator filter. 4,284,966, Cl. 333-202.000.

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Wanner, Karl; and Bleicher, Manfred, to Robert Bosch GmbH. Portable hammer drill with rotating tool. 4,284,148, Cl. 173-109.000.

Warner-Lambert Company: *See—*
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Washizuka, Isamu: *See—*
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Watanabe, Eiki: *See—*
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Watanabe, Masazumi: *See—*
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Watanabe, Sakuji: *See—*
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Watanabe, Toshimi: *See—*
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Waters Associates, Inc.: *See—*
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Waters, William P.: *See—*
Kelton, Arden A.; Waters, William P.; Shrunk, David G.; and Bell, Michael L., 4,284,602, Cl. 422-72.000.

Watson, John C. Solar power generating system. 4,284,063, Cl. 126-425.000.

Watts, Lewis W., Jr.: *See—*
Marquis, Edward T.; Watts, Lewis W., Jr.; and Gipson, Robert M., 4,284,815, Cl. 564-332.000.
Marquis, Edward T.; and Watts, Lewis W., Jr., 4,284,816, Cl. 564-332.000.

Webb, Karen K.: *See—*
Olson, Daniel R.; Orkin, Ona V.; and Webb, Karen K., 4,284,685, Cl. 428-331.000.

Weber, Adam: *See—*
Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, 4,284,903, Cl. 307-10.0LS.

Weber, Harold J., to Coulter Systems Corporation. Power transfer network. 4,284,489, Cl. 204-298.000.

Weber, Harold J., to Coulter Systems Corporation. R.F. Sputtering apparatus including multi-network power supply. 4,284,490, Cl. 204-298.000.

Weber, Jesse A.: *See—*
Arter, Nelson K.; Hauke, Francis E.; and Weber, Jesse A., 4,285,017, Cl. 360-77.000.

Wedding, Brent M., to Corning Glass Works. Spectacle lenses to reduce discomfort from aphakia and certain eye diseases. 4,284,686, Cl. 428-334.000.

Wegner, Christian; Findeisen, Kurt; and Weider, Franz, to Bayer Aktiengesellschaft. Process for the preparation of water-dispersible or water-soluble blocked polyisocyanates, the blocked polyisocyanates obtainable by this process and lacquer binders containing these blocked polyisocyanates as isocyanate component. 4,284,544, Cl. 260-29.2TN.

Weider, Franz: *See—*
Wegner, Christian; Findeisen, Kurt; and Weider, Franz, 4,284,544, Cl. 260-29.2TN.

Weigele, Reinhold; Pfeil, Wolfgang; and Purr, Horst, to Develop Dr. Eisbein GmbH & Co. Apparatus for the metered feeding of ink to a ductor roll of an offset printing device. 4,284,005, Cl. 101-363.000.

Weingarten, Gordon G.: *See—*
Humber, David C.; Laing, Stuart B.; and Weingarten, Gordon G., 4,284,767, Cl. 544-22.000.
Laing, Stuart B.; and Weingarten, Gordon G., 4,284,766, Cl. 544-22.000.

Weinstock, Joseph: *See—*
Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,284,556, Cl. 260-239.0BB.

Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Pressure-relief valve devices. 4,284,101, Cl. 137-538.000.

Weis, Claus D., to Ciba-Geigy Corporation. Process for the manufacture of 4,5-dichloro-2-(4-chlorophenoxy)phenol. 4,284,828, Cl. 568-637.000.

Weitz, Hans-Martin: *See—*
Fischer, Rolf; and Weitz, Hans-Martin, 4,284,796, Cl. 560-262.000.

Weitzen, William; and Trippe, Jerry C., to General Technology Applications, Inc. Process for using magnetically ballasted sorbents. 4,284,511, Cl. 210-661.000.

Welburn, Ross, to Compumotion Corporation. Electrical wave synthesizer for controlling an electric motor. 4,284,940, Cl. 318-696.000.

Welch, Melvin B., to Phillips Petroleum Company. Olefin polymerization. 4,284,748, Cl. 526-119.000.

Wennerstrom, Karl F., to Prov & Verktyg AB. Apparatus for precutting metal strip in the manufacture of spiral strip pipes, e.g. ventilation ducts. 4,283,976, Cl. 83-301.000.

Werber, Fred W. K. R. Garment designing aid. 4,283,856, Cl. 33-14.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Durrer, Jorg; and Mayer, Cornelius, 4,284,326, Cl. 350-63.000.

Werner, Peter: *See—*
Suchowerskyj, Wadym; Werner, Peter; Schnurle, Hans; Mohrle, Werner; and Drews, Urlich, 4,284,050, Cl. 123-483.000.

Wernet, William F.: *See—*
Adams, William J.; Wernet, William F.; and Haskins, Steve W., 4,284,855, Cl. 179-100.00C.

West Electric Co., Ltd.: *See—*
Iwata, Hiroshi; and Hasegawa, Wataru, 4,284,336, Cl. 354-25.000.

West, Frank E., to Baron Hire Limited; and West, Frank Edward. Reciprocating drive means. 4,284,038, Cl. 123-46.00A.

West, Frank Edward: *See—*
West, Frank E., 4,284,038, Cl. 123-46.00A.

Western Electric Company, Inc.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,284,842, Cl. 174-107.000.
Canning, Everett J., Jr., 4,284,428, Cl. 75-64.000.
Chayka, George A.; and Schneider, Fred J., 4,284,466, Cl. 156-583.100.
Gursky, Michael T., 4,283,839, Cl. 29-589.000.
Jaccodine, Ralph J.; and Kestenbaum, Ami, 4,284,659, Cl. 427-53.100.
Lesyk, Joseph N., 4,284,314, Cl. 339-75.00M.

Western Gear Corporation: *See—*
Obear, Robert F., 4,283,886, Cl. 51-92.00R.

Western Thomson Controls, Limited: *See—*
Buswell, Robert E., 4,283,823, Cl. 29-157.10R.

Westfalia Separator AG: *See—*
Kulker, Otto, 4,284,233, Cl. 233-20.00A.

Westinghouse Brake and Signal Company Limited: *See—*
Norton, David J., 4,284,256, Cl. 246-5.000.

Westinghouse Electric Corp.: *See—*
Barnhardt, Scott B., 4,284,913, Cl. 310-54.000.
DeLaurentis, Angelo A.; Zola, Frank G., Jr.; and Specht, Theodore R., 4,283,842, Cl. 29-606.000.
Matty, Thomas C., 4,284,930, Cl. 318-269.000.
Wiley, Roy O.; and Samborski, Bruce A., 4,284,318, Cl. 339-103.00C.

Westman, Erik: *See—*
Brunosson, Gunnar; Larsson, Hans-Gunnar; and Westman, Erik, 4,284,393, Cl. 425-7.000.

White, Ben E.: *See—*
Geyer, Charles J., Jr.; and White, Ben E., 4,284,765, Cl. 536-60.000.

White, Emery A., to General Electric Company. Repeating station for use in digital data communications link. 4,284,843, Cl. 178-69.00G.

White, Wallace E. Automatic livestock feeder. 4,284,035, Cl. 119-51.110.

Whittaker, Graham; and O'Brien, Anne, to Imperial Chemical Industries Limited. Liquid phase preparation of 2-chloro-5-trifluoromethylpyridine and 2-chloro-5-perchlorofluoromethylpyridine. 4,284,783, Cl. 546-345.000.

Whybrew, Walter D.: *See—*
Bucovaz, Edsel T.; Morrison, John C.; Whybrew, Walter D.; and Tarnowski, Stanley J., Jr., 4,284,552, Cl. 260-112.00R.

Wiczer, Sol B. Thickened gelatinous edible alcoholic medicated carrier. 4,284,649, Cl. 424-362.000.

Wiebecke, Klaus: *See—*
Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, 4,284,041, Cl. 123-193.00H.

Wieber, Karl: *See—*
Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, 4,284,327, Cl. 350-87.000.

Wieber, Karl R.: *See—*
Reese, Robert O.; Wieber, Karl R.; and Sholly, James A., 4,284,417, Cl. 55-2.000.

Wiener, Hans, to Pressmaster A.B. Gripping or pressing tool. 4,283,933, Cl. 72-409.000.

Wilcox, Martin H., to Advanced Diagnostic Research Corporation. Ultrasonic interrogating system and exciter-detector circuit therefor. 4,285,010, Cl. 358-112.000.

Wildenrotter, Karl, to M.A.N. Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft. Apparatus for collecting solar energy. 4,284,061, Cl. 126-418.000.

Wildfeuer, Robert. System for cooling. 4,283,925, Cl. 62-434.000.

Wiley, Roy O.; and Samborski, Bruce A., to Westinghouse Electric Corp. Electric plug. 4,284,318, Cl. 339-103.00C.

Wilhelms, Otto-Henning: *See—*
Friebe, Walter-Gunar; Thiel, Max; Kampe, Wolfgang; Wilhelms, Otto-Henning; and Roesch, Androniki, 4,284,633, Cl. 424-253.000.

Wilke, Douglad A. Solar energy air roof. 4,284,070, Cl. 126-450.000.

Willeitner, Eberhard: *See—*
Maier, Erwin; Hirschmann, Wilhelm; and Willeitner, Eberhard, 4,284,231, Cl. 233-1.00R.

Williams, Dennis W. Threshing and separating apparatus. 4,284,086, Cl. 130-27.00M.

Williams, Joseph R.: *See—*
Keller, Alex J.; Flowers, Thad; Williams, Joseph R.; and Patel, Navinchandra K., 4,283,909, Cl. 57-306.000.

Williams, Robert A. Chaff-flare test adapter connecting and disconnecting apparatus. 4,284,315, Cl. 339-89.00M.

Williamson, Raymond E., to ACF Industries, Inc. Crashworthy fuel pump improvement. 4,284,391, Cl. 417-569.000.

Willinger, Karl, to Miba Sintermetall Aktiengesellschaft. Segment-shaped blade. 4,283,819, Cl. 29-79.000.

Willinger, Karl, to Miba Sintermetall Aktiengesellschaft. Segment-shaped blade. 4,283,820, Cl. 29-79.000.

Willmott, Leo C.: *See—*
Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., 4,283,822, Cl. 29-156.80H.

Willson, Carlton G.: *See*—
Clecak, Nicholas J.; Grant, Barbara D.; and Willson, Carlton G., 4,284,706, Cl. 430-191.000.

Wilson, Alexander J., to Girling Limited. Servo boosters. 4,283,992, Cl. 91-369.00B.

Wilson, Michael T. Adjustable prosthetic element. 4,283,800, Cl. 3-21.000.

Windmoller & Holscher: *See*—
Schmidt, Horst; and Struck, Hans, 4,284,229, Cl. 229-57.000.

Winkley, Jerry H., to ACF Industries, Inc. Tamper resistant choke pull-off. 4,284,589, Cl. 261-39.00B.

Wiremold Company, The: *See*—
Baker, Charles T., 4,284,840, Cl. 174-48.000.

Wittern, Francis A. Carousel dispensing apparatus. 4,284,206, Cl. 221-90.000.

Wolber: *See*—
Duttlinger, Jean, 4,284,450, Cl. 156-97.000.

Wolff, Robert. Working stand for neckless electrical home worker machines. 4,284,373, Cl. 408-87.000.

Wolter, Eckhard, to Baudat E. Wolter KG. Scissor-type shear, especially a cable cutter. 4,283,851, Cl. 30-134.000.

Wong, John L., to Research Corporation. 9,10,11,12,12-Pentachloro 4,6-dioxa-5-thia-1-aza-tricyclo[7.2.1.$0^{2,8}$]dodec-11-ene. 4,284,563, Cl. 260-330.300.

Wong, Keith K.: *See*—
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,284,624, Cl. 424-177.000.

Woodward, Gary F., to Ford Motor Company. Tamper resistive odometer. 4,284,882, Cl. 235-96.000.

Woolpert, Mark: *See*—
Hather, Robert K., 4,284,303, Cl. 296-100.000.

Worst, Joseph C. Grooved golf ball. 4,284,276, Cl. 273-232.000.

Wright, Albert L. H., to Butler Greenwich Inc. Web preparation apparatus. 4,284,463, Cl. 156-502.000.

Wright, David R., to Stablex A.G. Treatment of hazardous waste. 4,284,514, Cl. 210-721.000.

Wu, Pai-Chuan: *See*—
Cancio, Leopoldo V.; Miller, Gerald W.; and Wu, Pai-Chuan, 4,284,671, Cl. 428-35.000.

Wu, Wan C.: *See*—
Kruse, Robert L.; and Wu, Wan C., 4,284,737, Cl. 525-243.000.

Wuest, Gerald A.: *See*—
Hickey, John L.; and Wuest, Gerald A., 4,283,963, Cl. 74-400.000.

Xerox Corporation: *See*—
Silverberg, Morton, 4,284,270, Cl. 271-166.000.

Yahalom, Joseph, to Bell Telephone Laboratories, Incorporated. Palladium treatment procedure. 4,284,482, Cl. 204-140.000.

Yamada, Minoru: *See*—
Ogawa, Junkichi; Tanaka, Mitsugu; and Yamada, Minoru, 4,284,714, Cl. 430-364.000.

Yamada, Sachiko; Ohmori, Masayuki; and Takayama, Hiroaki, to Yamada, Sachiko; and Takayada, Hiroaki. Novel vitamin D_3 derivative and process for preparing the same. 4,284,577, Cl. 260-397.200.

Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Exposure control system for single lens reflex cameras. 4,284,341, Cl. 354-51.000.

Yamada, Tetsuya: *See*—
Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Iizaka, Isao, 4,284,344, Cl. 355-14.00E.

Yamaguchi, Yutaka: *See*—
Takeda, Shojiro; Kinno, Bunji; and Yamaguchi, Yutaka, 4,283,890, Cl. 52-143.000.

Yamamoto, Hiroshi: *See*—
Kawamura, Masaharu; Shigeta, Yoshihiro; Uchidoi, Masanori; Sugiura, Yoji; and Yamamoto, Hiroshi, 4,284,333, Cl. 354-23.00D.

Yamamoto, Isamu: *See*—
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.

Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, to Mitsubishi Denki Kabushiki Kaisha. Method of making plastic encapsulated semiconductor devices. 4,283,838, Cl. 29-588.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.

Yamasaki, Shin: *See*—
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.

Yamauchi, Takafumi: *See*—
Shigeoka, Ritsuo; Nagahisa, Eizo; and Yamauchi, Takafumi, 4,284,653, Cl. 426-312.000.

Yamaura, Hiroshi: *See*—
Onodera, Keiichi; and Yamaura, Hiroshi, 4,284,916, Cl. 310-70.00R.

Yanagi, Masana: *See*—
Iida, Hiroshi; Kometani, Kiichi; and Yanagi, Masana, 4,284,540, Cl. 260-22.00R.

Yanagidaira, Hidetaka: *See*—
Tamori, Michitoshi; Shintani, Sotokichi; Kobayashi, Hideo; and Yanagidaira, Hidetaka, 4,285,045, Cl. 364-724.000.

Yano, Kazuaki: *See*—
Tatebayashi, June; and Yano, Kazuaki, 4,284,401, Cl. 431-7.000.

Yassemi, Mark, to Excellon Industries. Electric motor construction. 4,284,917, Cl. 310-89.000.

Yasui, Seimei: *See*—
Sato, Hiroshi; Fujisawa, Koiti; Tojima, Hideto; and Yasui, Seimei, 4,284,818, Cl. 568-323.000.

Yasukawa, Masao: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.

Yau, Wallace W.: *See*—
Grant, John W.; Kirkland, Joseph J.; and Yau, Wallace W., 4,284,498, Cl. 209-155.000.

Yazaki, Mutsunobu: *See*—
Ito, Fumio; and Yazaki, Mutsunobu, 4,284,337, Cl. 354-25.000.

Yokoyama, Nobuaki, to Silver Seiko, Ltd. Hand-operated knitting machine with loop transfer functions. 4,283,927, Cl. 66-78.000.

Yokoyama, Seijiro: *See*—
Yoshida, Yasuharu; Tagashira, Yoshimi; and Yokoyama, Seijiro, 4,285,062, Cl. 375-20.000.

Yoshida, Hajime; Aoki, Takashi; and Nishida, Kei, to Hajime Industries Ltd.; and Nihon Pillow Block Mfg. Co. Flaw detecting apparatus. 4,284,353, Cl. 356-240.000.

Yoshida, Hiromi: *See*—
Oguchi, Toshihiko; Ishizawa, Akio; and Yoshida, Hiromi, 4,284,700, Cl. 430-105.000.

Yoshida, Yasuharu; Tagashira, Yoshimi; and Yokoyama, Seijiro, to Nippon Electric Co., Ltd. Digital multi-level multi-phase modulation communication system. 4,285,062, Cl. 375-20.000.

Yoshiike, Yoshiji: *See*—
Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, 4,285,032, Cl. 362-224.000.

Yoshimura, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Waveguide device. 4,284,967, Cl. 333-248.000.

Yoshiwara, Tetsuya: *See*—
Tate, Masahisa; Yoshiwara, Tetsuya; and Kobatake, Tatsuo, 4,284,214, Cl. 222-590.000.

Young, Cecil G.: *See*—
Kinard, William C.; Carter, Donald F.; and Young, Cecil G., 4,283,818, Cl. 29-76.00R.

Young, Ian R., to EMI Limited. Imaging systems. 4,284,948, Cl. 324-309.000.

Young, Ian R.: *See*—
Burl, Michael; Clow, Hugh; Harrison, Colin G.; and Young, Ian R., 4,284,950, Cl. 324-320.000.

Young, John E. G.; and Schneckenburger, Donald R., to General Signal Corporation. Input torque control system for a variable displacement pump. 4,284,389, Cl. 417-218.000.

Yu, Ruey J.; and Van Scott, Eugene J. Stabilized water-in-oil emulsions. 4,284,630, Cl. 424-241.000.

Yucius, Albert C.; and Brother, Michael D., to Systems Engineering & Mfg. Corp. Data acquisition technique for hoist and conveying systems. 4,284,977, Cl. 340-147.00P.

Yucius, Albert C., to Systems Engineering & Manufacturing Corp. Conveying system control. 4,284,978, Cl. 340-147.00P.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,284,997, Cl. 357-22.000.

Zaner, Clifford: *See*—
Andersen, Harold W.; Andersen, Shirley R.; Zaner, Clifford; and Harrison, Charles H., 4,284,599, Cl. 422-18.000.

Zank, Anthony E.: *See*—
Morrison, Eric F.; and Zank, Anthony E., 4,285,004, Cl. 358-10.000.

Zaverzence, Harry: *See*—
Patchett, David R.; Phipps, Warren J.; and Zaverzence, Harry, 4,284,312, Cl. 339-60.00R.

Zbinden, Terry B., to Sperry Corporation. Apparatus for providing evenly delayed digital signals. 4,285,063, Cl. 375-106.000.

Zdeb, John J.: *See*—
Horton, Richard H.; and Zdeb, John J., 4,283,887, Cl. 52-2.000.

Zeiler, Hans-Joachim: *See*—
Grohe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,284,629, Cl. 424-246.000.

Zenith Radio Corporation: *See*—
Srivastava, Gopal K., 4,285,005, Cl. 358-28.000.

Ziegler, Franz: *See*—
Nagel, Erich; Ziegler, Franz; and Schaner, Ferdinand, 4,284,221, Cl. 225-100.000.

Ziemek, Gerhard: *See*—
Schatz, Friedrich; and Ziemek, Gerhard, 4,283,824, Cl. 29-157.400.

Ziggity Systems, Inc.: *See*—
Hostetler, Eldon, 4,284,036, Cl. 119-72.500.

Zimmerman, Dennis M., to Eli Lilly and Company. Analgesic 1,2,4,5-tetra-alkyl-4-arylpiperidines. 4,284,635, Cl. 424-267.000.

Zipoy, William L.: *See*—
Jackson, Timothy; Malkemes, Charles D.; and Zipoy, William L., 4,284,362, Cl. 400-124.000.

Zobrist, Gerald S.; Dunlap, Terry A.; and Russell, Richard H., to Zonic Corporation. Torsional exciter for a rotating structure. 4,283,957, Cl. 73-814.000.

Zola, Frank G., Jr.: *See*—
DeLaurentis, Angelo A.; Zola, Frank G., Jr.; and Specht, Theodore R., 4,283,842, Cl. 29-606.000.

Zonic Corporation: *See*—
Zobrist, Gerald S.; Dunlap, Terry A.; and Russell, Richard H., 4,283,957, Cl. 73-814.000.

Zubovics, Zoltan: *See*—
Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,284,642, Cl. 424-273.00R.

Zudal, Andrew: *See*—
Mayhall, Riley H.; and Zudal, Andrew, 4,283,903, Cl. 53-587.000.

Zukowski, Edward A., to El Paso Polyolefins Company. Ethylene-propylene block copolymerization process and product. 4,284,738, Cl. 525-247.000.

Zukowski, Edward A., to El Paso Polyolefins Company. Block copolymerization process. 4,284,739, Cl. 525-268.000.

Zygowicz, Martin F.: *See*—
Sheets, Jesse E.; Vitchus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., 4,284,402, Cl. 431-9.000.

Zylka, Lawrence C.: *See*—
Paulson, Jerome T.; and Zylka, Lawrence C., 4,284,371, Cl. 406-99.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baxter Travenol Laboratories, Inc.: *See*—
Macemon, James H., Re. 30,712, Cl. 356-318.000.

Brozek, Bohumir: *See*—
Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Doudlebsky, Ctibor: *See*—
Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Dow Chemical Company, The: *See*—
Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., Re. 30,714, Cl. 134-2.000.

Ferris, Donald L.; and Krauss, Timothy A., to United Technologies Corp. Cross beam rotor. Re. 30,713, Cl. 416-141.000.

Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., to Dow Chemical Company, The. Removal of copper containing incrustations from ferrous surfaces. Re. 30,714, Cl. 134-2.000.

Jaros, Frantisek: *See*—
Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Johnson, Robert C., to Reynolds Leasing Corporation. Tiered container with flow distribution system. Re. 30,710, Cl. 131-302.000.

Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, to Vyzkumny Ustav Bavlnarsky. Method of removing impurities and similar matter from staple fibres in ringless spinning and device for performing said method. Re. 30,709, Cl. 57-58.950.

Krauss, Timothy A.: *See*—
Ferris, Donald L.; and Krauss, Timothy A., Re. 30,713, Cl. 416-141.000.

Macemon, James H., to Baxter Travenol Laboratories, Inc. System and apparatus for contour plotting the total luminescence spectrum of a sample. Re. 30,712, Cl. 356-318.000.

Muehlberg, Paul E.: *See*—
Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., Re. 30,714, Cl. 134-2.000.

Northern Telecom Limited: *See*—
Woytiuk, Leo V., Re. 30,715, Cl. 174-23.00C.

Reynolds Leasing Corporation: *See*—
Johnson, Robert C., Re. 30,710, Cl. 131-302.000.

Stanley Works, The: *See*—
Suska, Charles R., Re. 30,716, Cl. 200-61.700.

Suman, George O., Jr. Well completion method and system. Re. 30,711, Cl. 166-285.000.

Suska, Charles R., to Stanley Works, The. Switch activating hinge having reciprocating cam follower switch actuator. Re. 30,716, Cl. 200-61.700.

Svec, Zdenek: *See*—
Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Teumac, Fred N.: *See*—
Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., Re. 30,714, Cl. 134-2.000.

United Technologies Corp.: *See*—
Ferris, Donald L.; and Krauss, Timothy A., Re. 30,713, Cl. 416-141.000.

Vyzkumny Ustav Bavlnarsky: *See*—
Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Woytiuk, Leo V., to Northern Telecom Limited. Water blocked electric cables. Re. 30,715, Cl. 174-23.00C.

LIST OF DESIGN PATENTEES

Aktiebolaget Overums Bruk: *See*—
Carlsson, Erik H.; and Lindqvist, Rolf E., 260,264, Cl. D15-29.000.

AMBA Marketing Systems, Inc.: *See*—
Siegel, Milton I., 260,198, Cl. D3-48.000.
Siegel, Milton I., 260,199, Cl. D3-48.000.
Siegel, Milton I., 260,200, Cl. D3-48.000.
Siegel, Milton I., 260,201, Cl. D3-53.000.

Amco Corporation: *See*—
Bentson, Wade, 260,227, Cl. D7-129.000.

AMP Incorporated: *See*—
Crowley, Daniel J.; and Pass, Raymond V., 260,259, Cl. D14-107.000.

Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., to S. C. Johnson & Son, Inc. Liquid dispensing bottle. 260,236, 8-18-81, Cl. D9-338.000.

Anderson, Lenart; and Zissimopoulos, Nicholas, to Baxter Travenol Laboratories, Inc. Clamp. 260,235, 8-18-81, Cl. D8-394.000.

Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., to Appel, Mel. Toy oven. 260,274, 8-18-81, Cl. D21-122.000.

Arlac-Werk Heiko Ippen: *See*—
Halm, Hans, 260,273, Cl. D19-76.000.

Arnold, Peter K. Combined seat and easel. 260,203, 8-18-81, Cl. D6-17.000.

Aron, Daniel L., to Mole-Richardson Co. Spot lamp. 260,300, 8-18-81, Cl. D26-63.000.

Automation Designs, Inc.: *See*—
O'Neil, James P., 260,215, Cl. D6-194.000.

Baisch, Herbert: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 260,209, Cl. D6-177.000.

Barrash, Marshall J., to Coca-Cola Company, The. Bottle. 260,239, 8-18-81, Cl. D9-395.000.

Baxter Travenol Laboratories, Inc.: *See*—
Anderson, Lenart; and Zissimopoulos, Nicholas, 260,235, Cl. D8-394.000.

Beatrice Foods Co.: *See*—
Larson, Orville W., 260,224, Cl. D7-108.000.
Larson, Orville W., 260,225, Cl. D7-108.000.

Bentson, Wade, to Amco Corporation. Cooking rack. 260,227, 8-18-81, Cl. D7-129.000.

Biener, Sig: *See*—
Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig. 260,257, Cl. D14-17.000.

Biro, Michael; and Muckenfuss, Hans, to Rolf C. Hagen Ltd. Combined bird cage roof and bottom tray. 260,306, 8-18-81, Cl. D30-4.000.

Bisk, Leonard. Combined skirt and trouser hanger. 260,218, 8-18-81, Cl. D6-253.000.

Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., to Dart Industries Inc. Rotatable food serving assembly. 260,219, 8-18-81, Cl. D7-2.000.

Bobinger, Karl J.: *See*—
Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., 260,236, Cl. D9-338.000.

Bradford, Harold R. Minnow bucket holder. 260,278, 8-18-81, Cl. D22-22.000.

Buhk, Randall P., to Steelcase Inc. Armchair. 260,205, 8-18-81, Cl. D6-31.000.

Buhk, Randall P., to Steelcase Inc. Chair base. 260,216, 8-18-81, Cl. D6-196.000.

Burian, Paul D.: *See*—
MacGregor, Francis W.; and Burian, Paul D., 260,305, Cl. D28-67.000.

C. Sherman Johnson Co., Inc.: *See*—
Johnson, Curtiss S., Jr., 260,234, Cl. D8-370.000.

Caffee, Arland R. Measuring tool for laundry detergent or the like. 260,220, 8-18-81, Cl. D7-50.000.

Cagle, Bunyan B. Solid fuel furnace. 260,283, 8-18-81, Cl. D23-97.000.

Campbell, John F., to GSW Limited/Limitee. Check valve casing. 260,280, 8-18-81, Cl. D23-22.000.

Carlock, Joe D.: *See*—
Lewis, Marlan M.; and Carlock, Joe D., 260,214, Cl. D6-191.000.

Carlsson, Erik H.; and Lindqvist, Rolf E., to Aktiebolaget Overums Bruk. Coulter. 260,264, 8-18-81, Cl. D15-29.000.

Carluccio, John F. Cosmetic jar. 260,240, 8-18-81, Cl. D9-399.000.

Carluccio, John F. Cosmetic jar. 260,241, 8-18-81, Cl. D9-399.000.

Carluccio, John F. Cosmetic jar. 260,242, 8-18-81, Cl. D9-399.000.

Clairol Incorporated: *See*—
MacGregor, Francis W.; and Burian, Paul D., 260,305, Cl. D28-67.000.

Coca-Cola Company, The: *See*—
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Compagnie Generale des Etablisements Michelin: *See*—
Petitalot, Christian, 260,250, Cl. D12-143.000.
Computer Transceiver Systems, Inc.: *See*—
Middleton, Charles F., Jr., 260,202, Cl. D3-72.000.
Conti, Rino, to Dart Industries Inc. Strawberry huller or the like. 260,222, 8-18-81, Cl. D7-105.000.
Corbin, Richard H.: *See*—
Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., 260,219, Cl. D7-2.000.
Costa, Allan. Bottle. 260,238, 8-18-81, Cl. D9-389.000.
Cramer, Ronald G.: *See*—
Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., 260,236, Cl. D9-338.000.
Crespi, Gabriella. Open shelf unit. 260,212, 8-18-81, Cl. D6-186.000.
Crespi, Gabriella. Combined cabinet and open shelf unit. 260,213, 8-18-81, Cl. D6-186.000.
Crowley, Daniel J.; and Pass, Raymond V., to AMP Incorporated. Magnetic card reader. 260,259, 8-18-81, Cl. D14-107.000.
Dart Industries Inc.: *See*—
Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., 260,219, Cl. D7-2.000.
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De Coster, Pieter K. J., 260,223, Cl. D7-106.000.
Davis, Gilbert A. Tent. 260,277, 8-18-81, Cl. D21-253.000.
De Coster, Pieter K. J., to Dart Industries Inc. Pastry cutter or the like. 260,223, 8-18-81, Cl. D7-106.000.
DeMuro, Frank P. Log holder. 260,231, 8-18-81, Cl. D7-207.000.
D'Ercoli, Giacinto C., to McGraw-Edison Company. Spotlight. 260,298, 8-18-81, Cl. D26-63.000.
D'Ercoli, Giacinto C., to McGraw-Edison Company. Spotlight. 260,299, 8-18-81, Cl. D26-63.000.
Dietrich, Gerhard, to Grundig AG. Dictating machine. 260,255, 8-18-81, Cl. D14-3.000.
D'Innocente, Ralph; and Janosko, Richard L., to Jacuzzi Whirlpool Bath, Inc. Hydrotherapy spa. 260,288, 8-18-81, Cl. D24-38.000.
Dogliotti, Amilcare, to P. Ferrero & C. S.p.A. Beverage container. 260,243, 8-18-81, Cl. D9-425.000.
Doyel, John S. Miniature sewing machine. 260,265, 8-18-81, Cl. D15-69.000.
Fattor, Arthur P. Concentrating solar radiation collector assembly. 260,282, 8-18-81, Cl. D23-72.000.
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Workbench or similar article. 260,209, 8-18-81, Cl. D6-177.000.
Ford, Harry R.; and Yoshihashi, Yasuo, to Formica Corporation. Laminate sheet. 260,311, 8-18-81, Cl. D92-1.00R.
Ford, Harry R.; and Hirakawa, Koichi, to Formica Corporation. Laminate sheet. 260,312, 8-18-81, Cl. D92-1.00R.
Ford, Harry R.; and Hirakawa, Koichi, to Formica Corporation. Laminate sheet. 260,313, 8-18-81, Cl. D92-1.00R.
Formica Corporation: *See*—
Ford, Harry R.; and Yoshihashi, Yasuo, 260,311, Cl. D92-1.00R.
Ford, Harry R.; and Hirakawa, Koichi, 260,312, Cl. D92-1.00R.
Ford, Harry R.; and Hirakawa, Koichi, 260,313, Cl. D92-1.00R.
Yates, William F.; and Saito, Ichiro, 260,310, Cl. D92-1.0AA.
Yates, William F.; and Saito, Ichiro, 260,314, Cl. D92-1.00R.
Yates, William F.; and Saito, Ichiro, 260,315, Cl. D92-1.00R.
Yates, William F.; and Saito, Ichiro, 260,316, Cl. D92-1.00R.
Yates, William F.; and Saito, Ichiro, 260,317, Cl. D92-1.00R.
Fuzere Manufacturing Co., Inc.: *See*—
Fuzere, Robert J., 260,237, Cl. D9-341.000.
Fuzere, Robert J., to Fuzere Manufacturing Co., Inc. Semiconductor wafer container. 260,237, 8-18-81, Cl. D9-341.000.
Gallagher, Dennis J. Bicycle storage rack. 260,248, 8-18-81, Cl. D12-115.000.
Gardisette International AG: *See*—
Stocker, Hans, 260,309, Cl. D47-6.00E.
Gehlbach, Roger D.; and Kitka, Zoltan, to Interplay Design Limited. Slide with side rails. 260,276, 8-18-81, Cl. D21-244.000.
Geller, Douglas A.; and McElroy, David C., to Wham-O Mfg. Co. Children's play sprinkler or the like. 260,279, 8-18-81, Cl. D23-09.000.
General Cororation, The: *See*—
Shoji, Shunichi; and Suzuki, Hideaki, 260,263, Cl. D14-80.000.
General Electric Company: *See*—
Klucznik, Paul J., 260,256, Cl. D14-6.000.
Schindler, Donald R.; and Soules, Thomas F., 260,266, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,267, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,268, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,269, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,270, Cl. D16-42.000.
Schmitt, Charles H.; and Hoetker, James J., 260,226, Cl. D7-128.000.
Gibson, Sidney. Dressing table. 260,210, 8-18-81, Cl. D6-180.000.
Goldstein, Judith A.: *See*—
Goldstein, Mark; and Goldstein, Judith A., 260,233, Cl. D8-351.000.
Goldstein, Mark; and Goldstein, Judith A. Electric switch plate. 260,233, 8-18-81, Cl. D8-351.000.
Groene, Richard L. Module cargo unit for a pickup vehicle. 260,252, 8-18-81, Cl. D12-156.000.
Grundig AG: *See*—
Dietrich, Gerhard, 260,255, Cl. D14-3.000.
GSW Limited/Limitee: *See*—
Campbell, John F., 260,280, Cl. D23-22.000.
Halm, Hans, to Arlac-Werk Heiko Ippen. Wall mountable telephone register. 260,273, 8-18-81, Cl. D19-76.000.
Hamilton, Robert. Fire grate fret. 260,230, 8-18-81, Cl. D7-207.000.
Hartz Mountain Corporation, The: *See*—
Suchowski, Bernard, 260,308, Cl. D30-40.000.
Hawley, Richard: *See*—
Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig, 260,257, Cl. D14-17.000.
Heller, Norman S., to Heller Products, Inc. Canoe paddle. 260,254, 8-18-81, Cl. D12-215.000.
Heller Products, Inc.: *See*—
Heller, Norman S., 260,254, Cl. D12-215.000.
Hirakawa, Koichi: *See*—
Ford, Harry R.; and Hirakawa, Koichi, 260,312, Cl. D92-1.00R.
Ford, Harry R.; and Hirakawa, Koichi, 260,313, Cl. D92-1.00R.
Hirsh Company: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 260,209, Cl. D6-177.000.
Hoetker, James J.: *See*—
Schmitt, Charles H.; and Hoetker, James J., 260,226, Cl. D7-128.000.
Horntrich, Gunter, to Messrs. Kreuzer-Werk GmbH. Marking instrument. 260,272, 8-18-81, Cl. D19-43.000.
Horst, Thomas A.; and Welton, Charles L., to Horst, Thomas A., a part interest. Stirrup strap buckle. 260,307, 8-18-81, Cl. D30-25.000.
Humlong, Robert F., to Wald Manufacturing Co., Inc. Bicycle pedal, or the like. 260,249, 8-18-81, Cl. D12-125.000.
Innovative Concepts, Inc.: *See*—
Long, Jerry M.; and Womack, James A., 260,197, Cl. D3-35.000.
Interplay Design Limited: *See*—
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Jack Daniel Distillery, Lem Motlow, Prop., Inc.: *See*—
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Jacuzzi Whirlpool Bath, Inc.: *See*—
D'Innocente, Ralph; and Janosko, Richard L., 260,288, Cl. D24-38.000.
Janosko, Richard L.: *See*—
D'Innocente, Ralph; and Janosko, Richard L., 260,288, Cl. D24-38.000.
Johnson, Curtiss S., Jr., to C. Sherman Johnson Co., Inc. Releasable hook. 260,234, 8-18-81, Cl. D8-370.000.
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Rist, Judith A., 260,281, Cl. D23-52.000.
Kawano, Takeyoshi: *See*—
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.
Kelly, Thomas R.; and Sawant, Vijay A., to Thomas J. Lipton, Inc. Frozen confection. 260,195, 8-18-81, Cl. D1-22.000.
Kitka, Zoltan: *See*—
Gehlbach, Roger D.; and Kitka, Zoltan, 260,276, Cl. D21-244.000.
Klucznik, Paul J., to General Electric Company. Tape recorder and player or similar article. 260,256, 8-18-81, Cl. D14-6.000.
Knoll International, Inc.: *See*—
Sapper, Richard, 260,204, Cl. D6-30.000.
Kuntz, William E., Jr. Mail box signal. 260,319, 8-18-81, Cl. D99-29.000.
Lacey, Raymond P. Combined hair dryer and cabinet. 260,302, 8-18-81, Cl. D28-15.000.
Larose, Claude, to Triangle Accessoires de Motocyclettes LTEE. Combined luggage carrier and back rest for motorcycle. 260,251, 8-18-81, Cl. D12-158.000.
Larson, Orville W., to Beatrice Foods Co. Barbecue grill. 260,224, 8-18-81, Cl. D7-108.000.
Larson, Orville W., to Beatrice Foods Co. Barbecue grill. 260,225, 8-18-81, Cl. D7-108.000.
Lee, B. Paul, deceased; and by Lee, Esther M., personal representative. Combined cooking, roasting and shishkebob pan. 260,221, 8-18-81, Cl. D7-85.000.
Lee, Esther M., personal representative: *See*—
Lee, B. Paul, deceased; and Lee, Esther M., personal representative, 260,221, Cl. D7-85.000.
Lee, Robert L. Dental articulator. 260,287, 8-18-81, Cl. D24-10.000.
Lewis, Marlan M.; and Carlock, Joe D., to Marlan M. Lewis, Inc. Pedestal. 260,214, 8-18-81, Cl. D6-191.000.
Lindqvist, Rolf E.: *See*—
Carlsson, Erik H.; and Lindqvist, Rolf E., 260,264, Cl. D15-29.000.
Lofgren, Clark L., to Reed & Barton Corporation. Fork or similar article of flatware. 260,228, 8-18-81, Cl. D7-137.000.
Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Video cassette storage tray. 260,197, 8-18-81, Cl. D3-35.000.
Loos, Elsio J.; Van Wagener, Raymond H.; Sweeney, Paul B., Jr.; and Pulos, Arthur J., to Swingline, Inc. Powered collator. 260,258, 8-18-81, Cl. D14-110.000.
Lordahl, Var E., to T.S.G. Mfg. Co. Faucet spout gauge. 260,245, 8-18-81, Cl. D10-64.000.
MacGregor, Francis W.; and Burian, Paul D., to Clairol Incorporated. Lighted traveling mirror. 260,305, 8-18-81, Cl. D28-67.000.
Marlan M. Lewis, Inc.: *See*—
Lewis, Marlan M.; and Carlock, Joe D., 260,214, Cl. D6-191.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.

Maza, Dale T.; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Refuse container. 260,229, 8-18-81, Cl. D7-189.000.

McElroy, David C.: *See—*
Geller, Douglas A.; and McElroy, David C., 260,279, Cl. D23-09.000.

McGraw-Edison Company: *See—*
D'Ercoli, Giacinto C., 260,298, Cl. D26-63.000.
D'Ercoli, Giacinto C., 260,299, Cl. D26-63.000.

Means, Paul B., III: *See—*
Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 260,274, Cl. D21-122.000.

Messrs. Kreuzer-Werk GmbH: *See—*
Horntrich, Gunter, 260,272, Cl. D19-43.000.

Middleton, Charles F., Jr., to Computer Transceiver Systems, Inc. Computer terminal case. 260,202, 8-18-81, Cl. D3-72.000.

Miyazaki, Sadayasu, to Tomy Kogyo Co., Inc. Toy bank. 260,318, 8-18-81, Cl. D99-38.000.

Mole-Richardson Co.: *See—*
Aron, Daniel L., 260,300, Cl. D26-63.000.

Molnar, Thomas G., to Repco Limited. Platform used primarily to elevate a child's automobile seat. 260,206, 8-18-81, Cl. D6-85.000.

Motion Analysis, Inc.: *See—*
Plagenhoef, Stanley C., 260,196, Cl. D2-319.000.

Muckenfuss, Hans: *See—*
Biro, Michael; and Muckenfuss, Hans, 260,306, Cl. D30-4.000.

Murakami, Shinza: *See—*
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.

Neale, Peggy P.: *See—*
Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., 260,219, Cl. D7-2.000.

Nutting, Donald. Multiple medallion display rack. 260,208, 8-18-81, Cl. D6-157.000.

O'Connor, Russell A. Bar of soap. 260,301, 8-18-81, Cl. D28-8.100.

Ohta, Kikuo: *See—*
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.

Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 260,261, 8-18-81, Cl. D14-70.000.

O'Neil, James P., to Automation Designs, Inc. Leg for an industrial work table. 260,215, 8-18-81, Cl. D6-194.000.

P. Ferrero & C. S.p.A.: *See—*
Dogliotti, Amilcare, 260,243, Cl. D9-425.000.

Pass, Raymond V.: *See—*
Crowley, Daniel J.; and Pass, Raymond V., 260,259, Cl. D14-107.000.

Patriksson, Stig. Pedal vehicle. 260,247, 8-18-81, Cl. D12-112.000.

Pease Company: *See—*
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Shaffer, B. Jeremiah, 260,291, Cl. D25-72.000.
Shaffer, B. Jeremiah; and Rasmussen, Larry, 260,292, Cl. D25-72.000.
Shaffer, B. Jeremiah, 260,293, Cl. D25-72.000.
Shaffer, B. Jeremiah, 260,294, Cl. D25-72.000.
Shaffer, B. Jeremiah, 260,295, Cl. D25-72.000.
Shaffer, B. Jeremiah, 260,296, Cl. D25-72.000.
Shaffer, B. Jeremiah, 260,297, Cl. D25-72.000.

Petitalot, Christian, to Compagnie Generale des Etablisements Michelin. Tire. 260,250, 8-18-81, Cl. D12-143.000.

Plagenhoef, Stanley C., to Motion Analysis, Inc. Elastomeric shoesole. 260,196, 8-18-81, Cl. D2-319.000.

Pulos, Arthur J.: *See—*
Loos, Elsio J.; Van Wagener, Raymond H.; Sweeney, Paul B., Jr.; and Pulos, Arthur J., 260,258, Cl. D14-110.000.

Rasmussen, Larry: *See—*
Shaffer, B. Jeremiah; and Rasmussen, Larry, 260,290, Cl. D25-72.000.
Shaffer, B. Jeremiah; and Rasmussen, Larry, 260,292, Cl. D25-72.000.

Redmond, Jobie G., to Jack Daniel Distillery, Lem Motlow, Prop., Inc. Bookcase. 260,211, 8-18-81, Cl. D6-186.000.

Reed & Barton Corporation: *See—*
Lofgren, Clark L., 260,228, Cl. D7-137.000.

Reina, David W.: *See—*
Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 260,274, Cl. D21-122.000.

Repco Limited: *See—*
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Revlon, Inc.: *See—*
Rosenberg, William F., 260,304, Cl. D28-59.000.

Rhoe, Stanley A. Stepped back rest cushion. 260,217, 8-18-81, Cl. D6-201.000.

Rist, Judith A., to Judi's Orijinals. Infant bath pad. 260,281, 8-18-81, Cl. D23-52.000.

Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig, to Soundesign Corporation. Combined phonograph, tape player and lighting cabinet. 260,257, 8-18-81, Cl. D14-17.000.

Rolf C. Hagen Ltd.: *See—*
Biro, Michael; and Muckenfuss, Hans, 260,306, Cl. D30-4.000.

Rosenberg, William F., to Revlon, Inc. Pedicure tool. 260,304, 8-18-81, Cl. D28-59.000.

Rubbermaid Commercial Products Inc.: *See—*
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Rubin, David. Baby bottle holder. 260,289, 8-18-81, Cl. D24-48.000.

S. C. Johnson & Son, Inc.: *See—*
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Saito, Ichiro: *See—*
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Yates, William F.; and Saito, Ichiro, 260,314, Cl. D92-1.00R.
Yates, William F.; and Saito, Ichiro, 260,315, Cl. D92-1.00R.
Yates, William F.; and Saito, Ichiro, 260,316, Cl. D92-1.00R.
Yates, William F.; and Saito, Ichiro, 260,317, Cl. D92-1.00R.

Sapper, Richard, to Knoll International, Inc. Chair. 260,204, 8-18-81, Cl. D6-30.000.

Sawant, Vijay A.: *See—*
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Schenley Industries, Inc.: *See—*
Whyte, Adrian A., 260,207, Cl. D6-144.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,266, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,267, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,268, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,269, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,270, 8-18-81, Cl. D16-42.000.

Schmitt, Charles H.; and Hoetker, James J., to General Electric Company. Wall mountable microwave oven. 260,226, 8-18-81, Cl. D7-128.000.

Sergio, Eugene B., Jr. Projection television cabinet. 260,262, 8-18-81, Cl. D14-79.000.

Shaffer, B. Jeremiah; and Rasmussen, Larry, to Pease Company. Decorative composite glass panel for installation in a window. 260,290, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,291, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah; and Rasmussen, Larry, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,292, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a window. 260,293, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,294, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,295, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a window. 260,296, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,297, 8-18-81, Cl. D25-72.000.

Shelcore, Inc.: *See—*
Strauss, Manfred, 260,275, Cl. D21-150.000.

Shoji, Shunichi; and Suzuki, Hideaki, to General Cororation, The. Television receiver or similar article. 260,263, 8-18-81, Cl. D14-80.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,198, 8-18-81, Cl. D3-48.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,199, 8-18-81, Cl. D3-48.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,200, 8-18-81, Cl. D3-48.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,201, 8-18-81, Cl. D3-53.000.

Simons, Sanford L. Toggle switch guard. 260,232, 8-18-81, Cl. D8-350.000.

Smirne, Frank S. Guitar bridge pin. 260,271, 8-18-81, Cl. D17-20.000.

Soules, Thomas F.: *See—*
Schindler, Donald R.; and Soules, Thomas F., 260,266, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,267, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,268, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,269, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 260,270, Cl. D16-42.000.

Soundesign Corporation: *See—*
Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig, 260,257, Cl. D14-17.000.

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Buhk, Randall P., 260,205, Cl. D6-31.000.
Buhk, Randall P., 260,216, Cl. D6-196.000.

Steen, Howard: *See—*
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Shoji, Shunichi; and Suzuki, Hideaki, 260,263, Cl. D14-80.000.
Sweeney, Paul B., Jr.: *See*—
Loos, Elsio J.; Van Wagener, Raymond H.; Sweeney, Paul B., Jr.; and Pulos, Arthur J., 260,258, Cl. D14-110.000.
Swingline, Inc.: *See*—
Loos, Elsio J.; Van Wagener, Raymond H.; Sweeney, Paul B., Jr.; and Pulos, Arthur J., 260,258, Cl. D14-110.000.
Sylvan, Richard: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 260,209, Cl. D6-177.000.
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Van Wagener, Raymond H.: *See*—
Loos, Elsio J.; Van Wagener, Raymond H.; Sweeney, Paul B., Jr.; and Pulos, Arthur J., 260,258, Cl. D14-110.000.
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Syme, Duncan C., 260,284, Cl. D23-127.000.
Syme, Duncan C., 260,285, Cl. D23-127.000.
Syme, Duncan C., 260,286, Cl. D23-127.000.
Wald Manufacturing Co., Inc.: *See*—
Humlong, Robert F., 260,249, Cl. D12-125.000.
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Welton, Charles L.: *See*—
Horst, Thomas A.; and Welton, Charles L., 260,307, Cl. D30-25.000.
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Geller, Douglas A.; and McElroy, David C., 260,279, Cl. D23-09.000.
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Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 260,274, Cl. D21-122.000.
Wilkinson Sword Limited: *See*—
Wordtmann, Jurgen E., 260,303, Cl. D28-46.000.
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 18, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

151 4,283,797
426 4,283,798

CLASS 3

1.913 4,283,799
21 4,283,800

CLASS 4

353 4,283,802
496 4,283,801
4,283,803
506 Q 4,283,804

CLASS 7

127 4,283,805

CLASS 8

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506 4,284,411

CLASS 12

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CLASS 16

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CLASS 108

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18 EA 4,284,852
18 HB 4,284,853
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29.6 NR 4,284,545
4,284,547
29.6 R 4,284,546
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42.43 4,284,551
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345.2 4,284,568
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346.4 4,284,571
347.4 4,284,572
348.15 4,284,573
348.43 4,284,574
349 4,284,575
369 4,284,576
397.2 4,284,577
410.7 4,284,578
428.5 4,284,580
429 R 4,284,579
448 AD 4,284,581
464 4,284,582
465 C 4,284,583
545 R 4,284,584
549 4,284,585
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1.1 4,284,591
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45.3 4,284,596
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171 4,284,598

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CLASS 269

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CLASS 271

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CLASS 272

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101 4,284,273
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426 4,284,278

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19.5 4,284,284
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479 R 4,284,291
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CLASS 285

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4,284,902

CLASS 292

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251 4,284,300

CLASS 294

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CLASS 299

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221 D 4,284,907
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255 4,284,912
482 4,284,905

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328 4,284,921

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340 4,284,927
375 4,284,928

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CLASS 323

315 4,284,945

CLASS 324

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61 R 4,284,947
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430 4,284,951
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37 4,284,953
75 4,284,954
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CLASS 330

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4,284,959
300 4,284,960

CLASS 331

65 4,284,961
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94.5 H 4,284,963
94.5 S 4,284,964

CLASS 333

28 T 4,284,965
202 4,284,966
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CLASS 335

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195 4,284,970

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89 M 4,284,315
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103 C 4,284,318
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218 M 4,284,321
223 S 4,284,322

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52 R 4,284,971
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4,284,978
147 R 4,284,976
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546 4,284,982
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572 4,284,985
573 4,284,986
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726 4,284,988
731 4,284,989
870.32 4,284,990

CLASS 343

725 4,284,991
909 4,284,992

CLASS 346

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140 R 4,284,996

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335 4,284,355
429 4,284,356
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24 4,285,000
51 4,285,001
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293 4,285,012

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CLASS 361

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CLASS 362

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84 4,285,029
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305 4,285,034

CLASS 364

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4,285,036
4,285,037
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415 4,285,041
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707 4,285,043
721 4,285,044
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CLASS 366

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107 4,284,359
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343 4,284,361

CLASS 367

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99 4,285,053
183 4,285,054

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226 4,285,055

CLASS 369

63 4,284,279
100 4,285,056

CLASS 370

81 4,284,850
112 4,285,057
119 4,285,058

CLASS 371

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CLASS 375

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15 4,285,061
20 4,285,062
106 4,285,063

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234 4,284,364

CLASS 404

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44 4,284,366

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291 4,284,368

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86 4,284,370
99 4,284,371
106 4,284,372

CLASS 408

87 4,284,373
139 4,284,374
226 4,284,375

CLASS 409

24 4,284,376
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CLASS 411

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61 4,284,379
119 4,284,114
340 4,283,986

CLASS 414

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417 4,284,383
434 4,284,384
747 4,284,385

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569 4,284,391

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26 4,284,600
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72 4,284,602
100 4,284,604
101 4,284,603
249 4,284,605

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137 4,284,607
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321 S 4,284,614
345 4,284,612
447.4 4,284,615
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504 4,284,617
605 4,284,618

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5 4,284,620
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84 4,284,622
85 4,284,623
177 4,284,624
180 4,284,625
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229 4,284,627
230 4,284,628
241 4,284,630
246 4,284,629
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253 4,284,633
266 4,284,634
267 4,284,635
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4,284,638
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362 4,284,649

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8 4,284,394
66 4,284,395
342.1 4,284,396
392 4,284,397
394 4,284,398
410 4,284,399
444 4,284,400

CLASS 426

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50 4,284,651
72 4,284,652
312 4,284,653
538 4,284,654
602 4,284,655
641 4,284,656
651 4,284,657

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53.1 4,284,659
57 4,284,660
64 4,284,661
68 4,284,662
164 4,284,663
180 4,284,664
203 4,284,665
304 4,284,666
331 4,284,667
355 4,284,668
357 4,284,669
422 4,284,670

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54 4,284,673
69 4,284,674
116 4,284,675
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192 4,284,677
195 4,284,678
218 4,284,679
234 4,284,680
246 4,284,681
263 4,284,682
285 4,284,683
328 4,284,684
331 4,284,685
334 4,284,686
336 4,284,687
559 4,284,688
620 4,284,689

CLASS 429

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105 4,284,691
194 4,284,692
211 4,284,693

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59 4,284,698
96 4,284,699
105 4,284,700
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142 4,284,703
154 4,284,704
159 4,284,705
191 4,284,706
196 4,284,707
216 4,284,708
222 4,284,709
271 4,284,710
276 4,284,711
312 4,284,712
323 4,284,713
364 4,284,714
395 4,284,715
510 4,284,716
567 4,284,717
629 4,284,718

CLASS 431

7 4,284,401
9 4,284,402

CLASS 432

1 4,284,403
37 4,284,404

CLASS 433

24 4,284,405
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82 4,284,407

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18 4,284,719
58 4,284,720
70 4,284,721
94 4,284,722
123 4,284,723
255 4,284,724
301 4,284,725

CLASS 455

13 4,285,064
158 4,285,065
166 4,285,066

CLASS 474

14 4,284,408
185 4,284,409

CLASS 493

4 4,283,998

CLASS 521

28 4,284,726
4,284,727
155 4,284,728
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160 4,284,730

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68 4,284,733
92 4,284,734
93 4,284,735
169 4,284,736
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247 4,284,738
268 4,284,739
292 4,284,740
297 4,284,741
329 4,284,742
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408 4,284,745
510 4,284,746
530 4,284,747

CLASS 526

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68 4,284,752
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111 4,284,755
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245 4,284,758
261 4,284,759
306 4,284,760
373 4,284,761
485 4,284,762

CLASS 536

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10 4,284,764
60 4,284,765

CLASS 544

22 4,284,766
4,284,767
128 4,284,768
180 4,284,769
187 4,284,770
200 4,284,771
218 4,284,772
247 4,284,773
348 4,284,774
351 4,284,775
400 4,284,776

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115 4,284,778
189 4,284,779
4,284,780
286 4,284,781
288 4,284,782
345 4,284,783

CLASS 548

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248 4,284,785
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256 4,284,787
303 4,284,788

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52 4,284,789

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15 4,284,790
43 4,284,791
55 4,284,792
78 4,284,793
121 4,284,794
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4,284,803
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4,284,806
4,284,807
4,284,808
4,284,809
4,284,810
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4,284,812

CLASS 564

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253 4,284,814
332 4,284,815
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365 4,284,587

CLASS 568

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323 4,284,818
327 4,284,819
374 4,284,820
381 4,284,821
399 4,284,822
433 4,284,823
445 4,284,824
592 4,284,825
614 4,284,826
637 4,284,828
686 4,284,827
764 4,284,829
779 4,284,830
899 4,284,831

CLASS 570

190 4,284,832
224 4,284,833

CLASS 585

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25 4,284,834
277 4,284,835
438 4,284,836
523 4,284,837

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D2—	319	260,196		201	260,217		389	260,238		70	260,261		22	260,280	D28—	8.1	260,301
D3—	35	260,197		253	260,218		395	260,239		79	260,262		52	260,281		15	260,302
	48	260,198	D7—	2	260,219		399	260,240		80	260,263		72	260,282		46	260,303
		260,199		50	260,220			260,241		107	260,259		97	260,283		59	260,304
		260,200		85	260,221			260,242		110	260,258		127	260,284		67	260,305
	53	260,201		105	260,222		425	260,243	D15—	29	260,264			260,285	D30—	4	260,306
	72	260,202		106	260,223	D10—	1	260,244		69	260,265			260,286		25	260,307
D6—	17	260,203		108	260,224		64	260,245	D16—	42	260,266	D24—	10	260,287		40	260,308
	30	260,204			260,225		125	260,246			260,267		38	260,288	D47—	6 E	260,309
	31	260,205		128	260,226	D12—	112	260,247			260,268		48	260,289	D92—	1 AA	260,310
	85	260,206		129	260,227		115	260,248			260,269	D25—	72	260,290		1 R	260,311
	144	260,207		137	260,228		125	260,249			260,270			260,291			260,312
	157	260,208		189	260,229		143	260,250	D17—	20	260,271			260,292			260,313
	177	260,209		207	260,230		156	260,252	D19—	43	260,272			260,293			260,314
	180	260,210			260,231		158	260,251		76	260,273			260,294			260,315
	186	260,211	D8—	350	260,232		203	260,253	D21—	122	260,274			260,295			260,316
		260,212		351	260,233		215	260,254		150	260,275			260,296			260,317
		260,213		370	260,234	D14—	3	260,255		244	260,276			260,297			260,319
	191	260,214		394	260,235		6	260,256		253	260,277	D26—	63	260,298	D99—	29	
	194	260,215	D9—	338	260,236		17	260,257	D22—	22	260,278			260,299		38	260,318

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6 :	4,283,984		4,284,289		4,285,019		4,284,126		4,284,900		4,285,064
	4,284,299		4,284,290		4,285,030		4,284,259		4,284,966	25 :	4,283,799
	4,285,049		4,284,303		4,285,051		4,284,362		4,285,005		4,283,806
9 :	Re.30,713		4,284,313		4,285,053		4,284,363		4,285,065		4,283,850
	Re.30,716		4,284,359	08 :	4,283,914		4,284,386	18 :	4,283,833		4,284,021
01 :	4,283,874		4,284,370		4,283,921		4,284,394		4,283,963		4,284,031
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	4,284,062		4,284,406		4,284,079		4,284,495		4,284,037		4,284,202
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	4,285,059		4,284,457		4,284,219		4,284,668		4,284,402		4,284,355
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	4,284,285		4,284,472		4,284,850		4,284,946		4,284,421		4,284,449
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	4,284,847		4,284,602	09 :	4,283,835		4,285,060		4,284,635		4,284,463
	4,284,872		4,284,614		4,283,932	13 :	4,283,813		4,284,658		4,284,489
	4,284,956		4,284,619		4,283,953		4,284,058		4,284,981		4,284,490
	4,285,003		4,284,672		4,283,967		4,284,543	19 :	4,283,867		4,284,573
	4,285,010		4,284,676		4,284,076		4,284,842		4,284,158		4,284,605
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	4,283,818		4,284,744		4,284,211		4,284,040		4,283,928		4,284,978
	4,283,831		4,284,751		4,284,217		4,284,084		4,284,011		4,284,994
	4,283,834		4,284,833		4,284,218		4,284,100		4,284,276	26 :	4,283,810
	4,283,844		4,284,834		4,284,252		4,284,166		4,284,563		4,283,847
	4,283,857		4,284,835		4,284,269		4,284,177		4,284,648		4,283,882
	4,283,859		4,284,845		4,284,297		4,284,193		4,284,954		4,283,922
	4,283,872		4,284,858		4,284,318		4,284,215	22 :	4,283,969		4,283,968
	4,283,912		4,284,878		4,284,387		4,284,248		4,284,278		4,283,970
	4,283,936		4,284,896		4,284,475		4,284,281	23 :	4,283,864		4,284,052
	4,283,942		4,284,917		4,284,775		4,284,328	24 :	Re.30,712		4,284,096
	4,283,972		4,284,929		4,284,829		4,284,380		4,283,903		4,284,109
	4,283,982		4,284,931		4,284,840		4,284,391		4,283,971		4,284,113
	4,284,014		4,284,940		4,284,886		4,284,403		4,284,008		4,284,129
	4,284,015		4,284,951		4,284,904		4,284,415		4,284,212		4,284,132
	4,284,027		4,284,952		4,285,050		4,284,425		4,284,226		4,284,157
	4,284,063		4,284,955	10 :	4,284,400		4,284,451		4,284,365		4,284,180
	4,284,072		4,284,957		4,284,444		4,284,459		4,284,504		4,284,186
	4,284,074		4,284,960		4,284,601		4,284,521		4,284,505		4,284,213
	4,284,083		4,284,961		4,284,710		4,284,523		4,284,511		4,284,232
	4,284,103		4,284,985		4,284,777		4,284,527		4,284,542		4,284,261
	4,284,134		4,284,988	11 :	4,284,059		4,284,583		4,284,551		4,284,277
	4,284,160		4,284,995		4,284,649		4,284,588		4,284,647		4,284,301
	4,284,216		4,285,000	12 :	4,283,843		4,284,590		4,284,725		4,284,312
	4,284,235		4,285,001		4,283,988		4,284,603		4,284,747		4,284,322
	4,284,250		4,285,004		4,284,001		4,284,652		4,284,848		4,284,377
	4,284,274		4,285,015		4,284,033		4,284,657		4,284,862		4,284,493
	4,284,275		4,285,016		4,284,071		4,284,841		4,284,918		4,284,539

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DESIGN PATENTS

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04 : 260,200
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05 : 260,283
06 : 260,197
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50 : 260,284
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51 : 260,229
55 : 260,236

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48 : 4,759

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